The Life Of Jean Henri Fabre

Augustin Fabre

THE LIFE OF JEAN HENRI FABRE

BOOKS BY J. HENRI FABRE

THE LIFE OF THE SPIDER

THE LIFE OF THE FLY

THE MASON-BEES

BRAMBLE-BEES AND OTHERS

THE HUNTING WASPS

THE LIFE OF THE CATERPILLAR

THE LIFE OF THE GRASSHOPPER

THE SACRED BEETLE AND OTHERS

THE MASON-WASPS

THE GLOW-WORM AND OTHER BEETLES

MORE HUNTING WASPS

THE LIFE OF THE WEEVIL

INSECT ADVENTURES

THE LIFE OF JEAN HENRI FABRE

THE ENTOMOLOGIST

1823–1910

BY THE ABBE
AUGUSTIN FABRE

TRANSLATED BY
BERNARD MIALL

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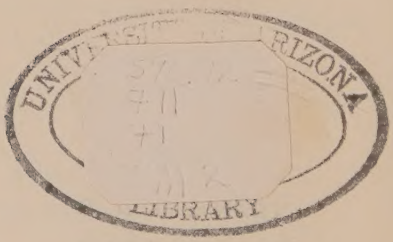

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TO MY PARENTS

IN TOKEN OF GRATITUDE AND ADMIRATION

FOR THE LABOURS AND THE EXAMPLE

OF THEIR LIVES

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NOTE BY TRANSLATOR

THOSE who wish to become more fully acquainted with Jean-Henri Fabre's delightful *Souvenirs Entomologiques* will find them, arranged in a different order, in the admirable series of translations from the pen of Mr. Teixeira de Mattos, published by Messrs. Dodd, Mead & Company, New York; a series which will, before long, be complete and contain the whole of the ten volumes of *Souvenirs*. Other translations are *The Life and Love of the Insect,* translated by Mr. Teixeira de Mattos; *Social Life in the Insect World,* translated by myself; *Wonders of Instinct,* translated by Mr. Teixeira and myself; and *Fabre, Poet of Science* (another biography), by Dr. G. V. Legros, translated by myself.

Post-war conditions have made it necessary somewhat to abridge the author's text, which fills two volumes. If, however, as I hope, these pages send the reader to my friend Mr. Teixeira's delightful versions of the *Souvenirs,* their principal aim will be fulfilled.

BERNARD MIALL.

1921.

AUTHOR'S PREFACE

I WAS eighteen years old; I was dreaming of diplomas, of a doctor's degree, of a brilliant university career. To encourage me and incite me to emulation, one of my uncles, rather more well-informed than those about him, addressed me much as follows:

"Put your back into it, my boy! Go ahead; follow the footsteps of your fellow-countryman and kinsman, Henri Fabre of Malaval, who has done what you want to do, and has become an eminent professor and a learned writer."

It is hardly credible, but this was the first time I had heard any one mention this famous namesake of mine, whose family, nevertheless, used to live on the opposite slope of the *puech* against which my tiny native *mas* was built.

His remark was not unheeded, and the name then engraved upon my memory has never been erased from it.

A few years later, having secured my doctor's degree, I was teaching philosophy, not in the University, but in the Grand Seminaire [1] of Lyons. The problem of instinct, which enters into the province of psychology, led me to consult the works of J. H. Fabre,

[1] The higher clerical seminary.—B. M.

which were recommended to me by the professor of Science. My worthy colleague regarded the author of the *Souvenirs Entomologiques* with a sort of worship, and it was with positive delight that he used to read aloud to me the finest passages of those masterly "Essays upon the Instincts and Habits of Insects."

A little later I chanced, in the course of my reading, on the *Revue Scientifique de Bruxelles,* which contained abundant extracts from the sixth volume of the *Souvenirs,* in which the author becomes confidential, and tells us, in the most delightful fashion, of his earliest childhood in the home of his grandparents "who tilled a poor holding on the cold granite backbone of the Rouergue tableland." Hullo! I said to myself: so the prince of entomologists is a child of the Rouergue! What a discovery!

For a long time I thought of publishing, in the local press, a short biography of Fabre with a few extracts from his writings. I was only waiting an opportunity and a little leisure.

This leisure I had not yet found, when the opportunity offered itself in a decisive and urgent fashion, in the scientific jubilee of the great naturalist, which was celebrated

at Sérignan on April 3, 1910. When all Provence was agog to celebrate the great man, when from all parts of France and from beyond her frontiers evidences of sympathy and admiration were pouring in, was it not only fitting that a voice should be upraised from the heart of Aveyron, and, above all, from that corner of Aveyron in which he first saw the light of day; if only to echo so many other voices, and to restore to his native countryside this unrivalled son of the Rouergue who had perhaps too readily been naturalised a Provençal? Moreover, in these times of overweening atheism, when so many pseudo-scientists are striving to persuade the ignorant that science is learning to dispense with God, would it not be a most timely thing to reveal, to the eyes of all, a scientist of undoubted genius who finds in science fresh arguments for belief, and manifold occasions for affirming his faith in the God who has created and rules the world?

And that was the origin of this book, the genesis of which will explain its character. Written especially for local readers, and consisting entirely of articles which appeared in the *Journal d'Aveyron,* it is fitting that it should piously gather up the most trivial local reminiscences of J. H. Fabre, and that it

should be full of allusions to the men and the things of Aveyron. Written solely to call attention to the life and labours of Fabre, the writer seeks to co-ordinate in a single book the biographical data scattered throughout the ten volumes and four thousand pages of the *Souvenirs*.

The reader must not take exception to the all but invariable praise of their author nor to that spirit of enthusiasm which he will perhaps detect behind the pages of this volume. This is not to say that everything in the life and work of our hero is equally perfect and worthy of admiration. Whether knowledge or virtue be in question human activity must always fall short somewhere, must always in some degree be defective. *Omnis consummationis vidi finem,* said the Psalmist. But apart from the fact that it is not yet time, perhaps, to form a final judgment, the reader, I trust, will remember that this book comes to him with an echo of the jubilee celebrations of Sérignan, and the homage, still touched with enthusiasm, of a son of Aveyron and the Vezins countryside to the most illustrious of his fellow-countrymen.

La Griffoulette, near Vezins,
August 28, 1910.

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THE LIFE OF JEAN HENRI FABRE

CHAPTER I

THE SÉRIGNAN JUBILEE

IN a few days' time [1] naturalists, poets, and philosophers will repair in company to Sérignan, in the neighbourhood of Orange. What is calling them from every point of the intellectual horizon, from the most distant cities and capitals, to a little Provençal village? *Moussu Fabré,* they would tell you yonder, in a tone of respectful sympathy.

But who is the *Moussu Fabré* thus cherished by the simplest as well as by the most cultivated minds? He is a sturdy old man of all but ninety years, who has spent almost the whole of his life in the company of Wasps, Bees, Gnats, Beetles, Spiders, and Ants, and has described the doings of these tiny creatures in a most wonderful fashion in ten large volumes entitled *Souvenirs Entomologiques* or *Etudes sur l'Instinct et les Mœurs des Insectes.*[2]

[1] The great entomologist's jubilee was celebrated on the April 3, 1910.—AUTHOR'S NOTE.

[2] Paris, Delagrave. The *Souvenirs,* translated by Alexander Teixeira de Mattos, are in course of publica-

One might say of this achievement what the author of *Lettres Persanes* said of his book: *Proles sine matre.* It is a child without a mother. It is, in short, unprecedented.[1] It has not its fellow, either in the *Machal* of Solomon, or the apologues of the old fabulists, or the treatises on natural history written by our modern scientists. The fabulists look to find man in the animal, which for them is little more than a pretext for comparisons and moral narratives, and the scientists commonly confine their curiosity to the dissection of the insect's organs, the analysis of its functions, and the classification of species. We might even say that the insect is the least of their cares, for, like Solomon,

tion by Messrs. Hodder and Stoughton in England and Messrs. Dodd, Mead and Co. in the United States. The arrangement of the essays has been altered in the English series. See also *The Life and Love of the Insect,* translated by Alexander Teixeira de Mattos (A. and C. Black), *Social Life in the Insect World,* translated by Bernard Miall (T. Fisher Unwin), and *Wonders of Instinct,* translated by Alexander Teixeira de Mattos and Bernard Miall (T. Fisher Unwin).—B. M.

[1] It must in justice be admitted that Fabre had certain precursors, among whom mention must be made of the famous Réaumur and Léon Dufour, a physician who lived in the Landes (died 1865), and who was the occasion and the subject of his first entomological publication. This does not alter the fact that his great work is not only absolutely original, but an achievement *sui generis* which cannot be compared with the mere sketches of his predecessors.

they delight in holding forth upon all the creatures upon the earth or in the heavens above, and all the plants "from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall" (1 Kings iv: 32-33).

Fabre, on the contrary, has eyes only for the insect. He observes it by and for itself, in the most trivial manifestations of its life: the living, active insect, with its labours and its habits, is the thing that interests him before all else, guiding his investigation of the infinite host of these tiny lives, which claim his attention on every hand; and in this world of insects wealth of artifice and capacities of the mental order seem to be in an inverse ratio to beauty of form and brilliance of colour. For this reason Fabre learns to disdain the magnificent Butterfly, applying himself by preference to the modest Fly: the two-winged Flies, which are relatives of our common House-fly, or the four-winged Flies, the numerous and infinitely various cousins of the Wasps and Bees; the Spiders, ugly indeed, but such skilful spinners, and even the Dung-beetles and Scarabæidæ of every species, those wonderful agents of terrestrial purification.

In this singular world, which affords him

the society which he prefers, he has gathered an ample harvest of unexpected facts and highly perplexing actions on the part of these little so-called inferior animals. No one has excelled him in detecting their slightest movements, and in surprising all the secrets of their lives. Darwin declared, and many others have repeated his words, that Fabre was "an incomparable observer." The verdict is all the more significant in that the French entomologist did not scruple to oppose his observations to the theories of the famous English naturalist.

Not only in the certainty and the detailed nature of his facts, but also in the colour and reality of his descriptions is his mastery revealed. In him the naturalist is reduplicated by a man of letters and a poet, who "understands how to cast over the naked truth the magic mantle of his picturesque language," [1] making each of his humble protagonists live again before our eyes, each with its characteristic achievements. So striking is this power of his that Victor Hugo described him as "the insects' Homer," while one of the most accomplished of our

[1] *Souvenirs,* Series VI., p. 65, *The Life of the Fly,* chap. vi., "My Schooling." This is Fabre's verdict upon another naturalist, Moquin-Tandon.

scientists, Mr. Edmond Perrier, Director of the Museum of Natural History, not content with saluting him as "one of the princes of natural history," speaks of his literary work in the following terms:

The ten volumes of his *Souvenirs Entomologiques* will remain one of the most intensely interesting works which have ever been written concerning the habits of insects, and also one of the most remarkable records of the psychology of a great observer of the latter part of the nineteenth century. In them the author depicts to the life not only the habits and the instincts of the insects; he gives us a full-length portrait of himself. He makes us share his busy life, amid the subjects of observation which incessantly claim his attention. The world of insects hums and buzzes about him, obsesses him, calling his attention from all directions, exciting his curiosity; he does not know which way to turn. Overwhelmed by the innumerable winged army of the drinkers of nectar who, on the fine summer days, invade his field of observation, he calls to his aid his whole household: his daughters, Claire, Aglaé, and Anna, his son Paul, his workmen, and above all his man-servant Favier, an old countryman who has spent his life in the barracks of the French colonies, a man of a thousand expedients, who watches his master with an incredulous yet admiring eye, listening to him but refusing to be convinced, and shocking him by

the assertion, which nothing will induce him to retract, that the bat is a rat which has grown wings, the slug an old snail which has lost its shell, the night-jar a toad with a passion for milk, which has sprouted feathers the better to suck the goats' udders at night, and so forth. The cats and the dog join the company at times, and one almost regrets that one is not within reach of the sturdy old man, so that one might respond to his call.

See him lying on the sand where everything is grilling in the burning rays of the sun, watching some wasp that is digging its burrow, noting its least movement, trying to divine its intentions, to make it confess the secret of its actions, following the labours of the innumerable Scarabaei that clean the surface of the soil of all that might defile it—the droppings of large animals, the decomposing bodies of small birds, moles, or water-rats; putting unexpected difficulties in their way, slily giving these tiny life-companions of his problems of his own devising to solve.[1]

That is well-expressed, and it gives us a fairly correct idea of the vital and poetic charm of the *Souvenirs*.

. . . . .

The same writer asks, speaking of the well-defined tasks performed by all these little creatures beloved of the worthy biologist of

[1] *Souvenirs*, VI., pp. 76-97; *The Glow-worm and Other Beetles*, chap. ix., "Dung-beetles of the Pampas."

Sérignan: "Who has taught each one its trade, to the exclusion of any other, and allotted the parts which they fill, as a rule with a completeness unequalled, save by 'their absolute unconsciousness of the goal at which they are aiming?' This is a very important problem: it is the problem of the origin of things. Henri Fabre has no desire to grapple with it. Living in perpetual amazement, amid the miracles revealed by his genius, he observes, but he does not explain."

For the moment we can no longer subscribe to the assertions of the learned Academician,[1] nor to his fashion of writing history, which is decidedly too free. The truth is that Fabre, who delights in the pageant of the living world, does not always confine himself to recording it; he readily passes from the smallest details of observation to the wide purviews of reason, and he is at times as much a philosopher as a poet and a naturalist. The truth is that he often considers the question of the origins of life, and he answers it unequivocally like the believer that he is. It is enough to cite one passage among others, a passage which testifies to a brief uplifting of the heart that presupposes many

[1] M. E. Perrier is a Member of the Institut de France.

others: "The eternal question, if one does not rise above the doctrine of dust to dust: how did the insect acquire so discerning an art?" And the following lines from the close of the same chapter: "The pill-maker's work confronts the reflective mind with a serious problem. It offers us these alternatives: either we must grant the flattened cranium of the Dung-beetle the distinguished honour of having solved for itself the geometrical problem of the alimentary pill, or we must refer it to a harmony that governs all things beneath the eye of an Intelligence which, knowing all things, has provided for all?" [1]

And indeed, when we consider closely, with the author of the *Souvenirs,* all the prodigies of art, all the marks of ingenuity displayed by these sorry creatures, so inept in other respects, then, whatever hypothesis we may prefer as to the formation of species, whether with Fabre we believe them fixed and unchanging, or whether with Gaudry [2]

[1] *Souvenirs,* VI., pp. 76, 97; *The Glow-worm,* chap. ix.

[2] M. Albert Gaudry is a sometime professor of palæontology in the Museum of Natural History, who, by virtue of his palæontological discoveries and works, has acquired a great authority in the scientific world. His *Enchaînements du Monde Animal dans les Temps Géologiques* is especially valued and often cited. Gaudry, who is a good Catholic as well as a scientist of the first rank,

we believe in their evolution, we cannot refrain from proclaiming the necessity of a sovereign Mind, the creator and instigator of order and harmony, and we are quite naturally led to repeat, to the glory of God the Creator, the beautiful saying of Saint Augustine: "*Fecit in cœlis angelos et in terris vermiculos, nec major in illis nec minor in istis.*"

Now this venerable nonagenarian whom naturalists, poets, and philosophers are so justly about to honour in Sérignan, because his brow is radiant with the purest rays of science, poetry, and philosophy: this entomologist of real genius, he whom Edmond Perrier ranks among "the princes of natural history," he whom Victor Hugo called "the insects' Homer," he whom Darwin proclaimed "an incomparable observer": who is there in Aveyron, knowing that he was born beneath our skies and that he has dwelt upon our soil, but will rejoice to feel that he belongs to us by his birth and the whole of his youth?

very definitely accepts the evolution of species; but for him, as for Fabre, the activity of the animal kingdom, like that of the world in general, is inconceivable apart from a sovereign mind which has foreseen all things and provided for all things.

CHAPTER II

THE URCHIN OF MALAVAL

JEAN-HENRI FABRE was born at Saint-Léons, the market-town and administrative centre of the canton of Vezins. In witness of which behold this extract from the register of baptisms, a certified copy transcribed by the Abbé Lafon, curé of Saint-Léons:

> In the year 1823, on the 22nd September, was baptised Jean-Henri-Casimir Fabre, of the aforesaid Saint-Léons, the legitimate son of Antoine Fabre and Victoire Salgues, inhabitants of the same place:—His godfather was Pierre Ricard, primary schoolmaster. In proof of which—Fabre, vicar.[1]

Jean-Henri Casimir's mother, by birth Victoire Salgues, was the daughter of the bailiff of Saint-Léons. His father, Antoine Fabre, was born in a little *mas* in the parish of Lavaysse, Malaval, where his parents were still cultivating the old family property

[1] Those journals which claim him as a native of Sérignan are therefore mistaken. "At Sérignan (Vaucluse), his *native countryside,* the peasants familiarly call him *Moussu Fabré* (*Univers,* March 3, 1910).

which since then has passed to the head of the Vaissière family.

It was thus at Malaval that the future entomologist "passed his earliest childhood," as he told me when writing to me ten years ago.[1] There was no wallowing in abundance at Saint-Léons. In order to relieve the poor household of one mouth, he was confided to the care of his grandmother and sent to Malaval. "There, in solitude, amid the geese, the calves, and the sheep, my mind first awoke to consciousness. What went before is for me shrouded in impenetrable darkness."

The spot which was the scene of this first awakening deserves description. When one follows the road from Laissac to Vezins, a short distance after passing Vaysse-Rodié, just as one has almost reached the crest of the height which by reason of its rocky helmet is called the *puech del Roucas,* on the line of the watershed dividing the limestone basin of the Aveyron from the granitic basin

[1] In the reminiscences of his childhood, which are intermingled with his entomological memoirs, Fabre does not mention a single proper name, whether of person or place; only the vague expression, "the table-land of the Rouergue," which he once incidentally employs, might give an attentive reader a hint as to the place of his origin. *Souvenirs,* VI., p. 38; *The Life of the Fly,* chap. v., "Heredity."

of the Viaur, on turning sharply to the right one sees before one the austere *Malavallis*, dominated on the one hand by the height of Lavaysse with its ancient church, and enlivened a little on the other side by the tiny hamlet of Malaval, which consists, to-day, of two farm-houses; one whiter, more cheerful-looking, and on lower ground; the other standing higher, greyer in hue, and more difficult to discover in the shade of the oak-trees and thickets of broom and blackthorn which form a dense mantle of green about it. It was there, amid these trees, in this house, three thousand feet above the sea, in sight of the sturdy belfry of Lavaysse, that Jean-Henri Fabre was "born into the true life," the life of the mind. Here, on this hillside, which directly faces the east, he made his earliest discoveries; here, one fine morning, as he will presently tell us, he discovered the sun; here, he saw not only the dawn of day, but also "that inward dawn, so far swept clear of the clouds of unconsciousness as to leave him a lasting memory."

Nothing could take the place of the picturesqueness and sincerity of the narrative in which he has related these earliest impressions of his childhood:

The Urchin of Malaval

My grandparents[1] were people whose quarrel with the alphabet was so great that they had never opened a book in their lives; and they kept a lean farm on the cold granite ridge of the Rouergue

[1] These paternal grandparents, of whom our hero has retained so vivid a recollection, bore the names of Jean-Pierre Fabre and Elisabeth Poujade. Patient searching of the archives, assisted, fortunately, by the goodwill of M. Toscan, registrar to the Justice of the Peace for Vezins, has enabled us to reproduce their marriage contract, which is full of information hitherto unpublished, and curious details of domestic life which will not fail to interest the reader:

"In the year 1791 and on the 15th day of the month of February, in the locality of Ségur, province of Aveiron, in the presence of me, Raymond Rous, man of law and notary royal . . . have been devised and concluded the following articles of marriage between *Pierre-Jean Fabre,* legitimate son of Pierre Fabre, landowner and farmer, and Anne Fages, husband and wife of the village of Malaval, on the one part, and *Elisabeth Poujade,* legitimate daughter of Antoine Poujade, landowner, and Françoise Azémar, husband and wife of the village of Mont, parish of Notre-Dame d'Arques, on the other part —the said parties acting, namely, the said future husband with the knowledge and consent of his father and mother here present, and the said future wife, she being absent, but the said Poujade for her, being here present stipulating and accepting—have *in the first place* promised that the said marriage shall be solemnised before the Church at the first demand of one of the parties, under penalty of all expenses, damages, and interests—*in the second place,* the said Fabre and Fages, husband and wife, favouring and contemplating the present marriage have given and are giving by donation, declared between living persons, to the aforesaid their son, the future husband, all and each of their possessions, movable and immovable, present and future, under the clauses, conditions, and reserves hereafter following: firstly, to be fed at the same table of the same victuals as the said donor; secondly, and in case of in-

table-land. The house, standing alone amidst the heath and broom, with no neighbour for many a mile around and visited at intervals by the wolves, was to them the hub of the universe. But for a

compatibility, they reserve to themselves the same income as Jean Fabre and Françoise Fabre, father and mother of the donor, reserved to themselves in the marriage contract of the said Fabre received by M. Dufieu, notary . . . ; thirdly, to settle upon their other children a portion such as by law shall pertain to them out of their possessions in money when they accept a settlement; and in case Françoise and Anne Fabre should not desire so to do, they shall enjoy the annual pension . . . of three *setiers* each of rye, two quarters each of oats, five pounds each of butter, and five pounds each of cheese; the use of their usual bed, and of their spinning-wheel; the use of their clothes-press and the small articles of furniture necessary according to their condition; . . . the said Fages, the mother, reserves to herself the sum of thirty francs to be paid once at her will to employ and dispose as she shall see fit. *In the third place,* the said Poujade, the father, favouring and contemplating the present marriage, has given and constituted as the dowry of his daughter, the future wife, to take the place of any right to a portion which she might claim against his goods and those of the mother aforesaid, a clothes-press with apparel valued at a hundred livres, a heifer and a cow valued the two at eighty francs, two sheep, and the sum of fifteen hundred livres, the said sum being made up of one hundred and fifty livres of the maternal parent's and the rest of the paternal parent's money. . . .

Devised and rehearsed in the presence of the sieur Joseph Déjean, burgher of Moulin-Savi, and the sieur André Bourles, practitioner of Ségur, signed by the aforesaid Fabre, father and son, and the aforesaid Poujade, father, and not the aforesaid Fages, who, being requested to sign, has stated that she is not able to do so. . . .

Forwarded by us, the notary undersigned, holder of the draft at Ségur, the 12th April 1807.

ROUS, *notary.*"

few surrounding villages, whither the calves were driven upon fair-days, the rest was only very vaguely known by hearsay. In this wild solitude, the mossy fens, with their quagmires oozing with iridescent pools, supplied the cows, the principal source of wealth, with plentiful pasture. In summer, on the short sward of the slopes, the sheep were penned day and night, protected from beasts of prey by a fence of hurdles propped up with pitchforks. When the grass was cropped close at one spot, the fold was shifted elsewhither. In the centre was the shepherd's rolling hut, a straw cabin. Two watch-dogs, equipped with spiked collars, were answerable for tranquillity if the thieving wolf appeared in the night from out the neighbouring woods.

Padded with a perpetual layer of cow-dung, in which I sank to my knees, broken up shimmering puddles of dark-brown liquid manure, the farmyard also boasted a numerous population. Here the lambs skipped, the geese trumpeted, the fowls scratched the ground, and the sow grunted with her swarm of little pigs hanging to her dugs.

The harshness of the climate did not give husbandry the same chances. In a propitious season they would set fire to a stretch of moorland bristling with gorse and send the swing-plough across the ground enriched by the cinders from the fire. This yielded a few acres of rye, oats, and potatoes. The best corners were kept for hemp, which furnished the distaffs and spindles of the house with

the material for cloth, and was looked upon as grandmother's private crop.

Grandfather, therefore, was, before all, a herdsman versed in the love of cows and sheep, but completely ignorant of aught else. How dumbfounded he would have been to learn that, in the remote future, one of his family would become enamoured of those insignificant animals to which he had never vouchsafed a glance in his life! Had he guessed that that lunatic was myself, the scapegrace seated at the table by his side, what a smack of the head I should have caught, what a wrathful look!

"The idea of wasting one's time with that nonsense!" he would have thundered.

For the patriarch was not given to joking. I can still see his serious face, his unclipped head of hair, often brought back behind his ears with a flick of the thumb and spreading its ancient Gallic mane over his shoulders. I see his little three-cornered hat, his small-clothes buckled at the knees, his wooden shoes, stuffed with straw, that echoed as he walked. Ah, no! Once childhood's games were past, it would never have done to rear the Grasshopper and unearth the Dung-beetle from his natural surroundings.

Grandmother, pious soul, used to wear the eccentric headdress of the Rouergue highlanders: a large disk of black felt, stiff as a plank, adorned in the middle with a crown a finger's-breadth high and hardly wider across than a six-franc piece. A black ribbon fastened under the chin maintained

the equilibrium of this elegant, but unstable circle. Pickles, hemp, chickens, curds and whey, butter; washing the clothes, minding the children, seeing to the meals of the household: say that and you have summed up the strenuous woman's round of ideas. On her left side, the distaff, with its load of tow; in her right hand, the spindle turning under a quick twist of her thumb, moistened at intervals with her tongue: so she went through life, unweariedly, attending to the order and the welfare of the house. I see her in my mind's eye, particularly on winter evenings, which were more favourable to family talk. When the hour came for meals, all of us, big and little, would take our seats round a long table, on a couple of benches, deal planks supported by four rickety legs. Each found his wooden bowl and his tin spoon in front of him. At one end of the table there always stood an enormous rye-loaf, the size of a cart-wheel, wrapped in a linen cloth with a pleasant smell of washing, and there it remained until nothing was left of it. With a vigorous stroke, grandfather would cut off enough for the needs of the moment; then he would divide the piece among us with the one knife which he alone was entitled to wield. It was now each one's business to break up his bit with his fingers and to fill his bowl as he pleased.

Next came grandmother's turn. A capacious pot bubbled lustily and sang upon the flames in the hearth, exhaling an appetising savour of bacon and turnips. Armed with a long metal ladle, grand-

mother would take from it, for each of us in turn, first the broth, wherein to soak the bread, and next the ration of turnips and bacon, partly fat and partly lean, filling the bowl to the top. At the other end of the table was the pitcher, from which the thirsty were free to drink at will. What appetites we had, and what festive meals those were, especially when a cream-cheese, home-made, was there to complete the banquet!

Near us blazed the huge fire-place, in which whole tree-trunks were consumed in the extreme cold weather. From a corner of that monumental, soot-glazed chimney, projected, at a convenient height, a slate shelf, which served to light the kitchen when we sat up late. On this we burnt slips of pine-wood, selected among the most translucent, those containing the most resin. They shed over the room a lurid red light, which saved the walnut-oil in the lamp.

When the bowls were emptied and the last crumb of cheese scraped up, grandam went back to her distaff, on a stool by the chimney-corner. We children, boys and girls, squatting on our heels and putting out our hands to the cheerful fire of furze, formed a circle round her and listened to her with eager ears. She told us stories, not greatly varied, it is true, but still wonderful, for the wolf often played a part in them. I should have very much liked to see this wolf, the hero of so many tales that made our flesh creep; but the shepherd always refused to take me into his straw hut, in the middle of the fold, at night.

When we had done talking about the horrid wolf, the dragon, and the serpent, and when the resinous splinters had given out their last gleams, we went to sleep the sweet sleep that toil gives. As the youngest of the household, I had a right to the mattress, a sack stuffed with oat-chaff. The others had to be content with straw.

I owe a great deal to you, dear grandmother: it was in your lap that I found consolation for my first sorrows. You have handed down to me, perhaps, a little of your physical vigour, a little of your love of work; but certainly you were no more accountable than grandfather for my passion for insects.

And yet in me, the observer, the inquirer into things, began to take shape almost in infancy. Why should I not describe my first discoveries? They are ingenuous in the extreme, but will serve notwithstanding to tell us something of the way in which tendencies first show themselves.

I was five or six years old. That the poor household might have one mouth less to feed, I had been placed in grandmother's care. Here, in solitude, my first gleams of intelligence were awakened amidst the geese, the calves, and the sheep. Everything before that is impenetrable darkness. My real birth was at the moment when the dawn of personality rises, dispersing the mists of unconsciousness and leaving a lasting memory. I can see myself plainly, clad in a soiled frieze frock flapping against my bare heels; I remember the handkerchief hanging from my waist by a bit of

string, a handkerchief often lost and replaced by the back of my sleeve.

There I stand one day, a pensive urchin, with my hands behind my back and my face turned to the sun. The dazzling splendour fascinates me. I am the Moth attracted by the light of the lamp. With what am I enjoying the glorious radiance: with my mouth or my eyes? That is the question put by my budding scientific curiosity. Reader, do not smile! the future observer is already practising and experimenting. I open my mouth wide and close my eyes: the glory disappears. I open my eyes and shut my mouth: the glory reappears. I repeat the performance, with the same result. The question's solved: I have learnt by deduction that I see the sun with my eyes. What a discovery! That evening I told the whole house all about it. Grandmother smiled fondly at my simplicity: the others laughed at it. 'Tis the way of the world.

Another find. At nightfall, amidst the neighbouring bushes, a sort of jingle attracted my attention, sounding very faintly and softly through the evening silence. Who is making that noise? Is it a little bird chirping in his nest? We must look into the matter, and that quickly. True, there is the wolf, who comes out of the woods at this time, so they tell me. Let's go all the same, but not too far: just there, behind that clump of broom. I stand on the look-out for long, but all in vain. At the faintest sound of movement in the brushwood, the jingle ceases. I try

again next day and the day after. This time my stubborn watch succeeds. Whoosh! A grab of my hand and I hold the singer. It is not a bird; it is a kind of Grasshopper whose hind-legs my playfellows have taught me to relish: a poor recompense for my prolonged ambush. The best part of the business is not the two haunches with the shrimpy flavour, but what I have just learnt. I now know, from personal observation, that the Grasshopper sings. I did not publish my discovery for fear of the same laughter that greeted my story about the sun.

Oh, what pretty flowers, in a field close to the house! They seem to smile to me with their great violet eyes. Later on I see, in their place, bunches of big red cherries. I taste them. They are not nice, and they have no stones. What can those cherries be? At the end of the summer, grandfather walks up with a spade and turns my field of observation topsy-turvy. From under ground there comes, by the basketful and sackful, a sort of round root. I know that root; it abounds in the house; time after time I have cooked it in the peat-stove. It is the potato. Its violet flower and its red fruit are pigeon-holed in my memory for good and all.

With an ever-watchful eye for animals and plants, the future observer, the little six-year-old monkey, practised by himself, all unawares. He went to the flower, he went to the insect, even as the Large White Butterfly goes to the cabbage, and the Red Admiral to the thistle.

It would be impossible to describe more delightfully the gradual development of tastes and aptitudes in the dawn of life.

The same freshness of impression and the same affinity for natural objects will be found in another recollection of the same period: the recollection of "a certain harmonica," whose music to the "ear of a child of six" sounded as sweet and strange as that of the frog whom he heard emitting his limpid note in the neighbourhood of the solitary farm as the last light of evening faded from the heights. "A series of glass slips, of unequal length, fixed upon two tightly-stretched tapes, and a cork on the end of a wire, which served as a striker": such was the instrument which some one brought the child from the latest fair. "Imagine an untutored hand striking at random upon this key-board, with the most riotous unexpectedness of octaves, discords, and inverted harmonies": such was the chiming of the bell-ringer frogs on the sunken lanes of Malaval. "As a song it had neither head nor tail; but the purity of the sound was delightful." How much more delightful, in the first radiance of his spontaneous childhood, this little scrap of a fellow who was beginning to play his part in the great concert of the world,

in which he was one day to fill so notable a place and to sing a new song to the glory of the Master of Nature![1]

[1] This account of the naturalist's childhood is drawn principally from *The Souvenirs,* vi., 32-45; see *The Life of the Fly,* chap. v., "Heredity."

CHAPTER III

THE SCHOOLBOY: SAINT-LÉONS

WITH his seventh year the time came for him to go to school. The schoolmaster of Saint-Léons was the child's godfather. Everything pointed to him as the child's first teacher. So Jean-Henri left the ancestral home at Malaval to return to his father's house at Saint-Léons and attend the local school, which was kept by his godfather, Pierre Ricard. He could not have done better as a start in life. Let us leave him to paint one picture of this second phase of his life. He begins with a description of the school:

What shall I call the room in which I was to become acquainted with the alphabet? It would be difficult to find the exact word, because the room served for every purpose. It was at once a school, a kitchen, a bedroom, a dining-room, and, at times, a chicken-house and a piggery. Palatial schools were not dreamt of in those days; any wretched hovel was thought good enough.

A broad fixed ladder led to the floor above.

Under the ladder stood a big bed in a boarded recess. What was there upstairs? I never quite knew. I would see the master sometimes bring down an armful of hay for the ass, sometimes a basket of potatoes which the housewife emptied into the pot in which the little porker's food was cooked. It must have been a loft of sorts, a store-house of provisions for man and beast. Those two apartments composed the whole building.

To return to the lower one, the schoolroom: a window faces south, the only window in the house, a long, narrow window whose frame you can touch at the same time with your head and both your shoulders. This sunny aperture is the only lively spot in the dwelling; it overlooks the greater part of the village, which straggles along the slopes of a tapering valley. In the window-recess is the master's little table.

The opposite wall contains a niche in which stands a gleaming copper pail full of water. Here the parched children can relieve their thirst when they please, with a cup left within their reach. At the top of the niche are a few shelves bright with pewter plates, dishes, and drinking-vessels, which are taken down from their sanctuary on great occasions only.

More or less everywhere, at any spot which the light touches, are crudely-coloured pictures, pasted on the walls. Here is Our Lady of the Seven Dolours, the disconsolate Mother of God, opening her blue cloak to show her heart pierced with seven daggers. Between the sun and moon, which stare

at you with their great, round eyes, is the Eternal Father, Whose robe swells as though puffed out with the storm. To the right of the window, in the embrasure, is the Wandering Jew. He wears a three-cornered hat, a large, white, leather apron, hobnailed shoes, and carries a stout stick. "Never was such a bearded man seen before or after," says the legend that surrounds the picture. The draughtsman has not forgotten this detail; the old man's beard spreads in a snowy avalanche over the apron and comes down to his knees. On the left is Geneviève of Brabant, accompanied by the roe; with cruel Golo hiding in the bushes, sword in hand. Above hangs *The Death of Mr. Credit,* slain by defaulters at the door of his inn; and so on and so on, in every variety of subject, at all the unoccupied spots of the four walls.

I was filled with admiration of this picture-gallery, which held one's eyes with its great patches of red, blue, green, and yellow. The master, however, had not set up his collection with a view to training our minds and hearts. That was the last and least of the worthy man's ambitions. An artist in his fashion, he had adorned his house according to his taste; and we benefited by the scheme of decoration.

While the gallery of halfpenny pictures made me happy all the year round, there was another entertainment which I found particularly attractive in winter, in frosty weather, when the snow lay long on the ground. Against the far wall stands the fire-place, as monumental in size as at

my grandmother's. Its arched cornice occupies the whole width of the room, for the enormous redoubt fulfils more than one purpose. In the middle is the hearth, but on the right and the left are two breast-high recesses, half wood and half stone. Each of them is a bed, with a mattress stuffed with husks of winnowed corn. Two sliding boards serve as shutters and close the chest if the sleeper would be alone. This dormitory, sheltered under the chimney breast, supplies couches for the favoured ones of the house, the boarders. They must lie snug in them at night, when the north wind howls at the mouth of the dark valley and sends the snow awhirl. The rest is occupied by the hearth and its accessories: the three-legged stools; the salt-box, hanging against the wall to keep its contents dry; the heavy shovel which it takes two hands to wield; lastly, the bellows, similar to those with which I used to blow out my cheeks in grandfather's house. They consist of a big branch of pine, hollowed throughout its length with a red-hot iron. By means of this channel one's breath is applied, from a convenient distance, to the spot which is to be revived. With a couple of stones for supports, the master's bundle of sticks and our own logs blaze and flicker, for each of us has to bring a log of wood in the morning, if he would share in the treat.

Nevertheless, the fire was not exactly lit for us, but, most of all, to warm a row of three pots in which simmered the pigs' food, a mixture of potatoes and bran. That, despite the tribute of

a log, was the real object of the brushwood fire. The two boarders, on their stools, in the best places, and we others, sitting on our heels, formed a semicircle around those big cauldrons full to the brim and giving off little jets of steam, with puff-puff-puffing sounds. The bolder among us, when the master's eyes were engaged elsewhere, would dig a knife into a well-cooked potato and add it to their bit of bread; for I must say that, if we did little work at my school, at least we did a deal of eating. It was the regular custom to crack a few nuts and nibble at a crust while writing our page or setting out our rows of figures.

We, the smaller ones, in addition to the comfort of studying with our mouths full, had every now and then two other delights, which were quite as good as cracking nuts. The back-door communicated with the yard where the hen, surrounded by her brood of chicks, scratched at the dung-hill, while the little porkers, of whom there were a dozen, wallowed in their stone trough. This door would open sometimes to let one of us out, a privilege which we abused, for the sly ones among us were careful not to close it on returning. Forthwith the porkers would come running in, one after the other, attracted by the smell of the boiled potatoes. My bench, the one where the youngsters sat, stood against the wall, under the copper pail to which we used to go for water when the nuts had made us thirsty, and was right in the way of the pigs. Up they came trotting and grunting, curling their little tails; they rubbed against our

legs; they poked their cold, pink snouts into our hands in search of a scrap of crust; they questioned us with their sharp little eyes to learn if we happened to have a dry chestnut for them in our pockets. When they had gone the round, some this way and some that, they went back to the farmyard, driven away by a friendly flick of the master's handkerchief. Next came the visit of the hen, bringing her velvet-coated chicks to see us. All of us eagerly crumbled a little bread for our pretty visitors. We vied with one another in calling them to us and tickling with our fingers their soft and downy backs. No, there was certainly no lack of distraction.[1]

Now we know the school, with all its amenities, and our curiosity, aroused to the highest pitch, inquires, not without some alarm, what was taught in such a place and in such company. After the description of the class-room, we have the programme of studies:

Let us first speak of the young ones, of whom I was one. Each of us had, or rather was supposed to have, in his hands a little penny book, the alphabet, printed on grey paper. It began, on the cover, with a pigeon or something like it. Next came a cross, followed by the letters in their

[1] *Souvenirs,* VI., pp. 46-68; *The Life of the Fly,* chap. vi., "My Schooling."

order. When we turned over, our eyes encountered the terrible *ba, be, bi, bo, bu,* the stumbling-block of most of us. When we had mastered that formidable page we were considered to know how to read and were admitted among the big ones. But if the little book was to be of any use, the least that was required was that the master should interest himself in us to some extent and show us how to set about things. For this the worthy man, too much taken up with the big boys, had not the time. The famous alphabet with the pigeon was thrust upon us only to give us the air of scholars. We were to contemplate it on our bench, to decipher it with the help of our next neighbours, in case he might know one or two of the letters. Our contemplation came to nothing, being every moment disturbed by a visit to the potatoes in the stewpots, a quarrel among playmates about a marble, the grunting invasion of the porkers, or the arrival of the chicks. With the aid of these diversions we would wait patiently until it was time for us to go home. That was our most serious work.

The big ones used to write. They had the benefit of the small amount of light in the room, by the narrow window where the Wandering Jew and ruthless Golo faced each other, and of the large and only table with its circle of seats. The school supplied nothing, not even a drop of ink; every one had to come with a full set of utensils. The ink-horn of those days, a relic of the ancient pen-case of which Rabelais speaks, was a long card-

board box divided into two stages. The upper compartment held the pens, made of goose-quill trimmed with a penknife; the lower contained, in a tiny well, ink made of soot mixed with vinegar.

The master's great business was to mend the pens—a delicate task, not without danger for inexperienced fingers—and then to trace at the head of the white page a line of strokes, single letters, or words according to the scholar's capabilities. When that is over, keep an eye on the work of art which is coming to adorn the copy! With what undulating movements of the wrist does the hand, resting on the little finger, prepare and plan its flight! All at once the hand starts off, flies, whirls; and lo and behold, under the line of writing is unfurled a garland of circles, spirals, and flourishes, framing a bird with outspread wings; the whole, if you please, in red ink, the only kind worthy of such a pen. Large and small, we stood awestruck in the presence of such marvels. The family, in the evening, after supper, would pass from hand to hand the masterpiece brought back from school:—

"What a man!" was the comment. "What a man, to draw you a Holy Ghost with one stroke of the pen!"

What was read at my school? At most, in French, a few selections from sacred history. Latin recurred oftener, to teach us to sing vespers properly. The more advanced pupils tried to decipher manuscript, a deed of sale, the hieroglyphics of some scrivener.

And history, geography? No one ever heard of them. What difference did it make to us whether the earth was round or square! In either case, it was just as hard to make it bring forth anything.

And grammar? The master troubled his head very little about that, and we still less. We should have been greatly surprised by the novelty and the forbidding look of such words in the grammatical jargon as substantive, indicative, and subjunctive. Accuracy of language, whether of speech or writing, must be learnt by practice. And none of us was troubled by scruples in this respect. What was the use of all these subtleties, when, on coming out of school, a lad went back to his flock of sheep!

And arithmetic? Yes, we did a little of this, but not under that learned name. We called it sums. To put down rows of figures, not too long, add them and subtract them one from the other was more or less familiar work. On Saturday evenings, to finish up the week, there was a general orgy of sums. The top boy stood up and, in a loud voice, recited the multiplication table up to twelve times. I say twelve times, for, in those days, because of our old duodecimal measures, it was the custom to count as far as the twelve-times table, instead of the ten-times of the metric system. When this recital was over, the whole class, the little ones included, shouted it in chorus, creating such an uproar that chicks and porkers took to flight if they happened to be there.

And this went on to twelve times twelve, the first in the row starting the next table and the whole class repeating it as loud as it could yell. Of all that we were taught in school, the multiplication table was what we knew best, for this noisy method ended by dinning the different numbers into our ears. This does not mean that we became skilful reckoners. The cleverest of us easily got muddled with the figures to be carried in a multiplication sum. As for division, rare indeed were they who reached such heights. In short, the moment a problem, however insignificant, had to be solved, we had recourse to mental gymnastics much rather than to the learned aid of arithmetic.

This account cannot be suspected of any malicious exaggeration: the narrator is too full of sympathy for his old master to do him anything less than justice. In any case he bears him no grudge in respect of the deficiencies of his teaching:

When all is said, our master was an excellent man who could have kept school very well but for his lack of one thing: and that was time. He devoted to us all the little leisure which his numerous functions left him. And first of all, he managed the property of an absentee landowner, who only occasionally set foot in the village. He had under his care an old castle with four towers, which had

become so many pigeon-houses; he directed the getting-in of the hay, the walnuts, the apples, and the oats. We used to help him during the summer, when the school, which was well attended in winter, was almost deserted. The few who remained, because they were not yet big enough to work in the fields, were small children, including him who was one day to set down these memorable facts. Lessons were less dull at that time of year. They were often given on the hay or the straw; oftener still, lesson-time was spent in cleaning out the dovecot or stamping on the snails that had sallied in rainy weather from their ramparts, the tall box borders of the garden belonging to the castle.

Our master was a barber. With his light hand, which was so clever at beautifying our copies with curlicue birds, he shaved the notabilities of the place: the mayor, the parish priest, the notary. Our master was a bell-ringer. A wedding or a christening interrupted the lessons; he had to ring a peal. A gathering storm gave us a holiday: the great bell must be tolled to ward off the lightning and the hail. Our master was a choir-singer. With his mighty voice he filled the church where he led the *Magnificat* at vespers. Our master wound up the village clock. This was his proudest function. Giving a glance at the sun, to ascertain the time more or less nearly, he would climb to the top of the steeple, open a huge cage of rafters, and find himself in a maze of wheels and springs whereof the secret was known to him alone.

In this picture of the schoolmaster and the school we have lost sight for a time of our little Jean-Henri. What becomes of him? What does he do in such a school, under such a master? To begin with, no one takes a greater interest in the visits of hens and piglings, no one appreciates more keenly the delights of school in the open air. In the meanwhile, his love of plants and animals finds expression in all directions, even on the cover of his penny spelling-book:

Embellished with a crude picture of a pigeon which I study and contemplate much more zealously than the A, B, C. Its round eye, with its circlet of dots, seems to smile upon me. Its wing, of which I count the feathers one by one, tells me of flights on high, among the beautiful clouds; it carries me to the beeches, raising their smooth trunks above a mossy carpet studded with white mushrooms that look like eggs dropped by some vagrant hen; it takes me to the snow-clad peaks where the birds leave the starry print of their red feet. He is a fine fellow, my pigeon-friend: he consoles me for the woes hidden behind the cover of my book. Thanks to him, I sit quietly on my bench and wait more or less till school is over.

School out of doors has other charms. When the master takes us to kill the snails in the box borders, I do not always scrupulously fulfil my

office as exterminator. My heel sometimes hesitates before coming down upon the handful which I have gathered. They are so pretty! Just think, there are yellow ones and pink, white ones and brown, all with dark spiral streaks. I fill my pockets with the handsomest so as to feast my eyes upon them at my leisure.

On haymaking days in the master's field, I strike up an acquaintance with the Frog. Flayed and stuck at the end of a split stick, he serves as live bait to tempt the Crayfish from his retreat by the edge of the brook. On the alder-tree I catch the Hoplia, the splendid Beetle who pales the azure of the heavens. I pick the narcissus and learn to gather, with the tip of my tongue, the tiny drops of honey that lie right at the bottom of the cleft corolla. I also learn that too-long indulgence in this quest always brings a headache; but this discomfort in no way impairs my admiration for the glorious white flower, which wears a narrow red collar at the throat of its funnel. When we go to beat the walnut-trees, the barren grass-plots provide me with Locusts, spreading their wings, some into a blue fan, others into a red.

And thus the rustic school, even in the heart of winter, furnished continuous food for my interest in things.

But while the love of plants and animals developed automatically, without guide or example, in the child predestined to entomology,

there was one respect in which he did not make progress: the knowledge of the alphabet, which was indeed neglected for the pigeon. Consequently neither the schoolmaster nor the spelling-book had much to do with the earliest stage of his education. He tells us how he learned to read, not at Master Ricard's, but, thanks to his father, in the school of the animals and nature:

I was still at the same stage, hopelessly behindhand with the intractable alphabet, when my father, by a chance inspiration, brought me home from the town what was destined to give me a start along the road of reading. Despite the not insignificant part which it played in my intellectual awakening, the purchase was by no means a ruinous one. It was a large print, price six farthings, coloured and divided into compartments in which animals of all sorts taught the A, B, C by means of the first letters of their names.

I made such rapid progress that, in a few days, I was able to turn in good earnest to the pages of my little pigeon-book, hitherto so undecipherable. I was initiated; I knew how to spell. My parents marvelled. I can explain this unexpected progress to-day. Those speaking pictures, which brought me among my friends the beasts, were in harmony with my instincts. If the animal has not fulfilled all that it promised in so far as I am concerned, I have at least to thank it for teach-

ing me to read. I should have succeeded by other means, I do not doubt, but not so quickly or pleasantly. Animals for ever!

Luck favoured me a second time. As a reward for my prowess I was given La Fontaine's *Fables,* in a popular, cheap edition, crammed with pictures, small, I admit, and very inaccurate, but still delightful. Here were the crow, the fox, the wolf, the magpie, the frog, the rabbit, the ass, the dog, the cat; all persons of my acquaintance. The glorious book was immensely to my taste, with its skimpy illustrations in which the animal walked and talked. As to understanding what it said, that was another story. Never mind, my lad! Put together syllables that say nothing to you yet; they will speak to you later and La Fontaine will always remain your friend.[1]

[1] *Souvenirs,* IV., pp. 50-60; *The Life of the Fly.,* chap. vi., "My Schooling."

CHAPTER IV

THE SCHOOLBOY: SAINT-LÉONS

TO know a pupil thoroughly, it is not enough to study him in class; one must watch him at play, for it is then especially that his nascent tastes reveal themselves, and the outlines of his future personality are more plainly discerned.

We have seen Jean-Henri bending over his task under the eye of the schoolmaster, or of his father; now let us follow him in the free play of his activities, absorbed in intimate communion with the children of nature. He himself will tell us what were his favourite pastimes in the garden, by the pond, or in the fields.

All the reminiscences of the little Jean-Henri's schooldays pall before the memory of his father's garden:

A tiny hanging garden of some thirty paces by ten, situated right at the top of the village. The only spot that overlooks it is a little esplanade on which stands the old castle [1] with the four turrets

[1] The Château de Saint-Léons standing just outside and above the village of Saint-Léons, where the author

that have now become dovecotes. A steep path takes you up to this open space. From my house on, it is more like a precipice than a slope. Gardens buttressed by walls are staged in terraces on the sides of the funnel-shaped valley. Ours is the highest; it is also the smallest.

There are no trees. Even a solitary apple-tree would crowd it. There is a patch of cabbages, with a border of sorrel, a patch of turnips, and another of lettuces. That is all we have in the way of garden-stuff; there is no room for more. Against the upper supporting-wall, facing due south, is a vine-arbour which, at intervals, when the sun is generous, provides half a basketful of white muscatel grapes. These are a luxury of our own, greatly envied by the neighbours, for the vine is unknown outside this corner, the warmest in the village.

A hedge of currant-bushes, the only safeguard against a terrible fall, forms a parapet above the next terrace. When our parents' watchful eyes are off us, we lie flat on our stomachs, my brother [1] and I, and look into the abyss at the foot of the wall bulging under the thrust of the soil. It is the garden of monsieur le notaire.

There are beds with box-borders in that gar-

was born in 1823. Cf. *The Life of the Fly,* chaps. vi. and vii.—A. T. DE M.

[1] The brother whom Fabre here associates with the memories of his childhood has also proved a credit to his name and his vocation. M. Frédéric Fabre is to-day Director of the Crillon Canal and assistant justice for the southern canton of Avignon.

den; there are pear-trees reputed to give pears, real pears, more or less good to eat when they have ripened on the straw all through the late autumn. In our imagination, it is a spot of perpetual delight, a paradise, but a paradise seen the wrong way up: instead of contemplating it from below, we gaze at it from above. How happy they must be with so much space and all those pears!

We look at the hives, around which the hovering Bees make a sort of russet smoke. They stand under the shelter of a great hazel. The tree has sprung up all of itself in a fissure of the wall, almost on the level of our currant-bushes. While it spreads its mighty branches over the notary's hives, its roots, at least, are in our soil. It belongs to us. The trouble is to gather the nuts.

I creep along astride the strong branches projecting horizontally into space. If I slip, or if the support breaks, I shall come to grief in the midst of the angry Bees. I do not slip, and the support does not break. With the crooked stick which my brother hands me, I bring the finest clusters within my reach. I soon fill my pockets. Moving backwards, still straddling my branch, I recover *terra firma*. O wondrous days of litheness and assurance, when, for a few filberts, on a perilous perch we braved the abyss![1]

I confess I love this little sketch of the garden, which gives evidence of a singular

[1] *Souvenirs,* VIII., pp. 126, 127; *Bramble-Bees,* chap. xiii, "The Halicti."

clearness of perception in the gaze which this child already turns upon the things about him.

But I like still better the history of the duck-pond, graceful as an idyll and touching as an elegy, the idyll of a rustic childhood which becomes aware, simultaneously, of the family secrets and the secrets of nature; the elegy of a father's tenderness and a son's piety cramped and mortified by poverty, the elegy of intelligence, nay, of genius, ready to spread its wings and fettered in its flight by the heavy chains and harsh necessities of material existence:

How shall a man earn his living in my poor native village, with its inclement weather and its niggardly soil? The owner of a few acres of grazing-land rears sheep. In the best parts, he scrapes the soil with the swing-plough; he flattens it into terraces banked by walls of broken stones. Pannierfuls of dung are carried up on donkey-back from the cowshed. Then, in due season, comes the excellent potato, which, boiled and served hot in a basket of plaited straw, is the chief stand-by in winter.

Should the crop exceed the needs of the household, the surplus goes to feed a pig, that precious beast, a treasure of bacon and ham. The ewes supply butter and curds; the garden boasts cabbages, turnips, and even a few hives in a sheltered

corner. With wealth like that one can look fate in the face. But we, we have nothing, nothing but the little house inherited by my mother, and its adjoining patch of garden. The meagre resources of the family are coming to an end. It is time to see to it, and that quickly. What is to be done? That is the stern question which father and mother sat debating one evening.

Hop-o'-my-Thumb, hiding under the woodcutter's stool, listened to his parents overcome by want. I also, pretending to sleep, with my elbows on the table, listen, not to blood-curdling designs, but to grand plans that set my heart rejoicing. This is how the matter stands: at the bottom of the village, near the church, at the spot where the water of the large roofed spring escapes from its underground weir and joins the brook in the valley, an enterprising man, back from the war,[1] has set up a small tallow-factory. He sells the scrapings of his pans, the burnt fat, reeking of candle-grease, at a low price. He proclaims these wares to be excellent for fattening ducks.

"Suppose we breed some ducks," says mother. "They sell very well in town. Henri would mind them and take them down to the brook."

"Very well," says father, "let's breed some ducks. There may be difficulties in the way; but we'll have a try."

That night I had dreams of paradise: I was with my ducklings, clad in their yellow suits; I

[1] The war of 1830 with Algiers.—A. T. DE M.

took them to the pond, I watched them have their bath, I brought them back again, carrying the more tired ones in a basket.

A month or two after, the little birds of my dreams were a reality. There were twenty-four of them. They had been hatched by two hens, of whom one, the big black one, was an inmate of the house, while the other was borrowed from a neighbour.

To bring them up, the former is sufficient, so careful is she of her adopted family. At first everything goes perfectly: a tub with two fingers' depth of water serves as a pond. On sunny days the ducklings bathe in it under the anxious eye of the hen.

A fortnight later, the tub is no longer enough. It contains neither cresses crammed with tiny Shell-fish nor Worms and Tadpoles, dainty morsels both. The time has come for dives and hunts amid the tangle of the water-weeds; and for us the day of trouble has also come. True, the miller, down by the brook, has fine ducks, easy and cheap to rear; the tallow-smelter, who has extolled his burnt fat so loudly, has some as well, for he possesses the advantage of the waste water from the spring at the bottom of the village; but how are we, right up there, at the top, to procure aquatic sports for our broods? In summer we have hardly water to drink!

Near the house, in a freestone recess, a scanty spring trickles into a basin made in the rock. Four or five families have, like ourselves, to draw their

water there in copper pails. By the time that the schoolmaster's donkey has slaked her thirst and the neighbours have taken their provision for the day, the basin is dry. We have to wait for four-and-twenty hours for it to fill. No, this is not the hole in which the ducks would delight, nor indeed in which they would be tolerated.

There remains the brook. To go down to it with the troop of ducklings is fraught with danger. On the way through the village we might meet cats, bold ravishers of small poultry; some surly mongrel might frighten and scatter the little band; and it would be a hard puzzle to collect it in its entirety. We must avoid the traffic and take refuge in peaceful and sequestered spots.

On the hills, the path that climbs behind the château soon takes a sudden turn and widens into a small plain beside the meadows. It skirts a rocky slope whence trickles, level with the ground, a streamlet, which forms a pond of some size. Here profound solitude reigns all day long. The ducklings will be well off; and the journey can be made in peace by a deserted footpath.

You, little man, shall take them to that delectable spot. What a day it was that marked my first appearance as a herdsman of ducks! Why must there be a jar to the even tenor of such joys! The too-frequent encounter of my tender skin with the hard ground had given me a large and painful blister on the heel. Had I wanted to put on the shoes stowed away in the cupboard for Sundays and holidays, I could not. There was noth-

ing for it but to go barefoot over the broken stones, dragging my leg and carrying high the injured heel.

Let us make a start, hobbling along, switch in hand, behind the ducks. They, too, poor little things, have sensitive soles to their feet; they limp, they quack with fatigue. They would refuse to go any further if I did not, from time to time, call a halt under the shelter of an ash.

We are there at last. The place could not be better for my birdlets: shallow, tepid water, interspersed with muddy knolls and green eyots. The diversions of the bath begin forthwith. The ducklings clap their beaks and rummage here, there, and everywhere. They are happy; and it is a blessed thing to see them at work. We will let them be. It is my turn to enjoy the pond.

What is this? On the mud lie some loose, knotted, soot-coloured cords. One might take them for threads of wool like those which you pull out of an old ravelly stocking. Can some shepherdess, knitting a black sock and finding her work turn out badly, have begun all over again and, in her impatience, have thrown down the wool with all the dropped stitches? It really looks like it.

I take up one of those cords in my hand. It is sticky and extremely slack; the thing slips through the fingers before they can catch hold of it. A few of the knots burst and shed their contents. What comes out is a black globule, the size of a pin's head, followed by a flat tail. I recognise, on a very small scale, a familiar object:

the Tadpole, the Frog's baby. I have seen enough. Let us leave the knotted cords alone.

The next creatures please me better. They spin round on the surface of the water and their black backs gleam in the sun. If I lift a hand to seize them, that moment they disappear, I know not where. It's a pity: I should have much liked to see them closer and to make them wriggle in a little bowl which I should have put ready for them.

Let us look at the bottom of the water, pulling aside those bunches of green string whence beads of air are rising and gathering into foam. There is something of everything underneath. I see pretty shells with compact whorls, flat as beans; I notice little worms carrying tufts and feathers; I make out some with flabby fins constantly flapping on their backs. What are they all doing there? What are their names? I do not know. And I stare at them for ever so long, held by the incomprehensible mystery of the waters.

At the place where the pond dribbles into the adjoining field are some alder-trees; and here I make a glorious find. It is a Beetle—not a very large one, oh no! He is smaller than a cherry-stone, but of an unutterable blue. I put the glorious one inside an empty snail-shell, which I plug up with a leaf. I shall admire that living jewel at my leisure, when I get back. Other distractions summon me away.

The spring that feeds the pond trickles from the rock, cold and clear. The water first collects

into a cup, the size of the hollow of one's two hands, and then runs over in a stream. These falls call for a mill: that goes without saying. Two bits of straw, artistically crossed upon an axis, provide the machine; some flat stones set on edge afford supports. It is a great success: the mill turns admirably. My triumph would be complete, could I but share it. For want of other playmates, I invite the ducks.

Everything palls in this poor world of ours, even a mill made of two straws. Let us think of something else; let us contrive a dam to hold back the waters and form a pool. There is no lack of stones for the brickwork. I pick the most suitable; I break the larger ones. And, while collecting these blocks, suddenly I forget all about the dam which I meant to build.

On one of the broken stones, in a cavity large enough for me to put my fist in, something gleams like glass. The hollow is lined with facets gathered in sixes which flash and glitter in the sun. I have seen something like this in church, on the great saint's day, when the light of the candles in the big chandelier kindles the stars in its hanging crystal.

We children, lying, in summer, on the straw of the threshing-floor, have told one another stories of the treasures which a dragon guards underground. Those treasures now return to my mind: the names of precious stones ring out uncertainly but gloriously in my memory. I think of the king's crown, of the princesses' necklaces. In breaking

stones, can I have found, but on a much richer scale, the thing that shines quite small in my mother's ring? I want more such.

The dragon of the subterranean treasures treats me generously. He gives me his diamonds in such quantities that soon I possess a heap of broken stones sparkling with magnificent clusters. He does more: he gives me his gold. The water from the rock falls on a bed of fine sand which it swirls into bubbles. If I bend towards the light, I see something like gold-filings whirl where the fall touches the bottom. Is it really the famous metal of which twenty-franc pieces, so rare with us at home, are made? One would think so, from the glitter.

I take a pinch of sand and place it in my palm. The brilliant particles are numerous, but so small that I have to pick them up with a straw moistened in my mouth. Let us drop this: they are too tiny and too bothersome to collect. The big, valuable lumps must be farther on, in the thickness of the rock. We'll come back later; we'll blast the mountain.

I break more stones. Oh, what a queer thing has just come loose, all in one piece! It is turned spiral-wise, like certain flat Snails that come out of the cracks of old walls in rainy weather. With its gnarled sides, it looks like a little ram's-horn. Shell or horn, it is very curious. How do things like that find their way into the stone?

Treasures and curiosities make my pockets bulge with pebbles. It is late, and the little ducklings have had all they want to eat. Come along, young-

sters, let's go home. My blistered heel is forgotten in my excitement.

The walk back is a delight. A voice sings in my ear, an untranslatable voice, softer than any language and bewildering as a dream. It speaks to me for the first time of the mysteries of the pond; it glorifies the heavenly insect which I hear moving in the empty snail-shell, its temporary cage; it whispers the secrets of the rock, the gold-filings, the faceted jewels, the ram's-horn turned to stone.

Poor simpleton, smother your joy! I arrive. My parents catch sight of my bulging pockets, with their disgraceful load of stones. The cloth has given way under the rough and heavy burden.

"You rascal!" says father, at sight of the damage. "I send you to mind the ducks and you amuse yourself picking up stones, as though there weren't enough of them all round the house! Make haste and throw them away!"

Broken-hearted, I obey. Diamonds, gold-dust, petrified ram's-horn, heavenly Beetle are all flung on a rubbish-heap outside the door.

Mother bewails her lot:

"A nice thing, bringing up children to see them turn out so badly! You'll bring me to my grave. Green stuff I don't mind: it does for the rabbits. But stones, which ruin your pockets; poisonous animals, which'll sting your hand: what good are they to you, silly? There's no doubt about it: some one has thrown a spell over you!"

Yes, my poor mother, you were right, in your simplicity: a spell had been cast upon me; I ad-

mit it to-day. When it is hard enough to earn one's bit of bread, does not improving one's mind but render one more meet for suffering? Of what avail is the torment of learning to the derelicts of life?

A deal better off am I, at this late hour, dogged by poverty and knowing that the diamonds of the duck-pool were rock-crystal, the gold-dust mica, the stone horn an Ammonite, and the sky-blue Beetle a Hoplia! We poor men would do better to mistrust the joys of knowledge: let us dig our furrow in the field of the commonplace, flee the temptations of the pond, mind our ducks and leave to others, more favoured by fortune, the job of explaining the world's mechanism, if the spirit moves them.

And yet no! Alone among living creatures man has the thirst for knowledge; he alone pries into the mysteries of things. The least among us will utter his whys and his wherefores, a fine pain unknown to the brute beast. If these questionings come from us with greater persistence, with a more imperious authority, if they divert us from the quest of lucre, life's only object in the eyes of most men, does it behove us to complain? Let us be careful not to do so, for that would be denying the best of all our gifts.

Let us strive, on the contrary, within the measure of our capacity, to force a gleam of light from the vast unknown; let us examine and question and, here and there, wrest a few shreds of truth. We shall sink under the task; in the present ill-

ordered state of society, we shall end, perhaps, in the workhouse. Let us go ahead for all that: our consolation shall be that we have increased by one atom the general mass of knowledge, the incomparable treasure of mankind.

As this modest lot has fallen to me, I will return to the pond, notwithstanding the wise admonitions and the bitter tears which I once owed to it. I will return to the pond, but not to that of the small ducks, the pond aflower with illusions: those ponds do not occur twice in a lifetime. For luck like that, you must be in all the new glory of your first breeches and your first ideas.

Many another have I come upon since that distant time, ponds very much richer and, moreover, explored with the ripened eye of experience. Enthusiastically I searched them with the net, stirred up their mud, ransacked their trailing weeds. None in my memories comes up to the first, magnified in its delights and mortifications by the marvellous perspective of the years.[1]

His excursions to the pond and the garden were little more to our little Jean-Henri than the preface to rather more distant excursions in the neighbourhood of Saint-Léons. The edge of the brook, the crest of the hill and the skirts of the beechwood which limit his horizon are the chosen spots to which his

[1] *Souvenirs,* pp. 260-270. *The Life of the Fly,* chap. vii., "The Pond."

curiosity leads him, and the favourite scene of his childish rambles. It is really delightful to watch him taking possession of these unknown territories and making the first inventory of the wealth that he will explore later on.

On that day, wealthy and leisured, with an apple for my lunch and all my time to myself, I decided to visit the brown of the neighbouring hill, hitherto looked upon as the boundary of the world. Right at the top is a row of trees which, turning their backs to the wind, bend and toss about as though to uproot themselves and take to flight. How often, from the little window in my home, have I not seen them bowing their heads in stormy weather; how often have I not watched them writhing like madmen amid the snow-dust which the north-wind's besom raises and smooths along the hill-side! What are they doing up there, those desolate trees? I am interested in their supple backs, to-day still and upright against the blue of the sky, to-morrow shaken when the clouds pass overhead. I am gladdened by their calmness; I am distressed by their terrified gestures. They are my friends. I have them before my eyes at every hour of the day. In the morning the sun rises behind their transparent screen and ascends in its glory. Where does it come from? I am going to climb up there; and perhaps I shall find out.

I mount the slope. It is a lean grass-sward

close-cropped by the sheep. It has no bushes, fertile in rents and tears, for which I should have to answer on returning home, nor any rocks, the scaling of which involves like dangers; nothing but large, flat stones, scattered here and there. I have only to go straight on, over smooth ground. But the sward is as steep as a sloping roof. It is long, ever so long; and my legs are very short. From time to time I look up. My friends, the trees on the hill-top, seem to be no nearer. Cheerly, sonnie! Scramble away!

What is this at my feet? A lovely bird has flown from its hiding-place under the eaves of a big stone. Bless us, here's a nest made of hair and fine straw! It's the first I have ever found, the first of the joys which the birds are to bring me. And in this nest are six eggs, laid prettily side by side; and these eggs are a magnificent blue, as though steeped in a dye of celestial azure. Overpowered with happiness, I lie down on the grass and stare.

Meanwhile the mother, with a little clap of her gullet—"Tack! Tack!"—flies anxiously from stone to stone, not far from the intruder. My age knows no pity, is still too barbarous to understand maternal anguish. A plan is running in my head, a plan worthy of a little beast of prey. I will come back in a fortnight and collect the nestlings before they can fly away. In the meantime, I will just take one of those pretty blue eggs, only one, as a trophy. Lest it should be crushed, I place the fragile thing on a little moss in the scoop of

my hand. Let him cast a stone at me that has not, in his childhood, known the rapture of finding his first nest.

My delicate burden, which would be ruined by a false step, makes me give up the remainder of the climb. Some other day I shall see the trees on the hill-top over which the sun rises. I go down the slope again. At the bottom I meet the parish priest's curate reading his breviary as he takes his walk. He sees me coming solemnly along, like a relic-bearer; he catches sight of my hand hiding something behind my back:

"What have you there, my boy?" he asks.

All abashed, I open my hand and show my blue egg on its bed of moss.

"Ah!" says his reverence. "A Saxicola's egg! Where did you get it?"

"Up there, father, under a stone."

Question follows question; and my peccadillo stands confessed. "By chance I found a nest which I was not looking for. There were six eggs in it. I took one of them—here it is—and I am waiting for the rest to hatch. I shall go back for the others when the young birds have their quill-feathers."

"You mustn't do that, my little friend," replies the priest. "You mustn't rob the mother of her brood; you must respect the innocent little ones; you must let God's birds grow up and fly from the nest. They are the joy of the fields, and they clear the earth of its vermin. Be a good boy, now, and don't touch the nest."

I promise; and the curate continues his walk. I come home with two good seeds cast on the fallows of my childish brain. An authoritative word has taught me that plundering birds' nests is a bad action. I did not quite understand how the bird comes to our aid by destroying vermin, the scourge of the crops; but I felt, at the bottom of my heart, that it is wrong to afflict the mothers.

"Saxicola," the priest had said, on seeing my find.

"Hullo!" said I to myself. "Animals have names, just like ourselves. Who named them? What are all my different acquaintances in the woods and meadows called? What does Saxicola mean?"

Years passed; and Latin taught me that Saxicola means an inhabitant of the rocks. My bird, in fact, was flying from one rocky point to the other while I lay in ecstasy before its eggs; its house, its nest, had the rim of a large stone for a roof. Further knowledge gleaned from books taught me that the lover of stony hill-sides is also called the *Motteux,* or Clodhopper,[1] because, in the ploughing season, she flies from clod to clod, inspecting the furrows rich in unearthed grub-worms. Lastly, I came upon the Provençal expres-

[1] The Wheat-ear, one of the Saxicolæ, is known also as the White-Tail, the meaning of both forms being the same; White-ear being a corruptive of the Anglo-Saxon name. Both correspond with the Provençal *Cul-blanc.* The Stonechat is a member of the same genus. B. M.

sion *Cul-blanc,* which is also a picturesque term, suggesting the patch on the bird's rump which spreads out like a white butterfly flitting over the fields.

Thus did the vocabulary come into being that would one day allow me to greet by their real names the thousand actors on the stage of the fields, the thousand little flowers that smile at us from the wayside. The word which the curate had spoken without attaching the least importance to it revealed a world to me, the world of plants and animals designated by their real names. To the future must belong the task of deciphering some pages of the immense lexicon; for to-day I will content myself with remembering the Saxicola, or Wheat-ear.

On the west, my village crumbles into an avalanche of garden-patches, in which plums and apples ripen. Low, bulging walls, blackened with the stains of lichens and mosses, support the terraces. The brook runs at the foot of the slope. It can be cleared almost everywhere at a bound. In the wider parts, flat stones standing out of the water serve as a foot-bridge. There is no such thing as a whirlpool, the terror of mothers when the children are away; it is nowhere more than knee-deep. Dear little brook, so tranquil, cool, and clear, I have seen majestic rivers since, I have seen the boundless seas; but nothing in my memories equals your modest falls. About you clings all the hallowed pleasure of my first impressions.

A miller has bethought him of putting the brook,

which used to flow so gaily through the fields, to work. Halfway up the slope, a watercourse, economising the gradient, diverts part of the water, and conducts it into a large reservoir, which supplies the mill-wheels with motor-power. This basin stands beside a frequented path, and is walled off at the end.

One day, hoisting myself on a play-fellow's shoulders, I looked over the melancholy wall, all bearded with ferns. I saw bottomless, stagnant waters covered with slimy green. In the gaps in the sticky carpet, a sort of dumpy, black-and-yellow reptile was lazily swimming. To-day I should call it a Salamander; at that time, it appeared to me the offspring of the Serpent and the Dragon, of whom we were told such blood-curdling tales when we sat up at night. Hoo! I've seen enough; let's get down again, quick!

The brook runs below. Alders and ash, bending forward on either bank, mingle their branches and form a verdant arch. At their feet, behind a porch of great twisted roots, are watery caverns prolonged by gloomy corridors. On the threshold of these fastnesses shimmers a glint of sunshine, cut into ovals by the leafy sieve above.

This is the haunt of the red-necktied Minnows. Come along very gently, lie flat on the ground and look. What pretty little fish they are, with their scarlet throats! Clustering side by side, with their heads turned against the stream, they puff their cheeks out and in, rinsing their mouths incessantly. To keep their stationary position in the running

water, they need naught but a slight quiver of their tail and of the fin on their back. A leaf falls from the tree. Whoosh! The whole troop has disappeared.

On the other side of the brook is a spinney of beeches, with smooth, straight trunks, like pillars. In their majestic, shady branches sit chattering Rooks, drawing from their wings old feathers replaced by new. The ground is padded with moss. At one's first step on the downy carpet, the eye is caught by a mushroom, not yet full-spread and looking like an egg dropped there by some vagrant Hen. It is the first that I have picked, the first that I have turned round and round in my fingers, inquiring into its structure with that vague curiosity which is the first awakening of observation.

Soon I find others, differing in size, shape, and colour. It is a real treat for my prentice eyes. Some are fashioned like bells, like extinguishers, like cups; some are drawn out into spindles, hollowed into funnels, rounded into hemispheres. I come upon some that are broken and are weeping milky tears; I step on some that, instantly, become tinged with blue; I see some big ones that are crumbling into rot and swarming with worms. Others, shaped like pears, are dry and open at the top with a round hole, a sort of chimney whence a whiff of smoke escapes when I prod their underside with my finger. These are the most curious. I fill my pockets with them to make them smoke at my leisure, until I exhaust the contents, which are at last reduced to a kind of tinder.

What fun I had in that delightful spinney! I returned to it many a time after my first find; and here, in the company of the Rooks, I received my first lessons in mushroom lore. My harvests, I need hardly say, were not admitted to the house. The mushroom, or the *Bouturel,* as we call it, had a bad reputation for poisoning people. That was enough to make mother banish it from the family table. I could scarcely understand how the *Bouturel,* so attractive in appearance, came to be so wicked; however, I accepted the experience of my elders; and no disaster ever ensued from my rash friendship with the poisoner.

As my visits to the beech-clump were repeated, I managed to divide my finds into three categories. In the first, which was the most numerous, the mushroom was furnished underneath with little radiating flakes. In the second, the lower surface was lined with a thick pad pricked with hardly visible holes. In the third, it bristled with tiny spots similar to the papillæ on a cat's tongue. The need of some order to assist the memory made me invent a classification for myself.

Very much later there fell into my hands certain small books from which I learnt that my three categories were well known; they even had Latin names, which fact was far from displeasing to me. Ennobled by Latin which provided me with my first exercises and translations, glorified by the ancient language which the rector used in saying his mass, the mushroom rose in my esteem. To de-

serve so learned an appellation, it must possess a genuine importance.

The same books told me the name of the one that had amused me so much with its smoking chimney. It is called the Puffball in English, but its French name is the *Vesse-de-loup.* I disliked the expression, which to my mind smacked of bad company. Next to it was a more decent denomination: *Lycoperdon;* but this was only so in appearance, for Greek roots sooner or later taught me that *Lycoperdon* means *Vesse-de-loupe* and nothing else.

How far off are those blessed times when my childish curiosity sought solitary exercise in making itself acquainted with the mushroom! *"Eheu! Fugaces labuntur anni!"* said Horace. Ah, yes, the years glide fleeting by, especially when they are nearing their end! They were once the merry brook that dallies among the willows on imperceptible slopes; to-day, they are the torrent swirling a thousand straws along as it rushes towards the abyss.[1]

Can one imagine a more picturesque and original fashion of sketching the outline of one's earliest memories? We have collected these memories, which he has scattered so profusely over the pages of his books, with pious care, because they so delightfully re-

[1] *Souvenirs,* pp. 292-300. *The Life of the Fly,* chap. xvii., "Recollections of Childhood."

veal a soul and a life that are akin to our own, more especially in their beginnings, and because they so wonderfully evoke an age and a country that were once ours and are still the possession of our grand-nephews.

At the age of ten the time came for the child to bid a fresh farewell to his native village. His father was the first of his race to be tempted by the town, and he removed his home to Rodez. Jean-Henri was never again to behold the humble village where he lived "his best years," but he bore its image indelibly stamped upon his mind, upon that part of it in which are formed those profound impressions that grow more vivid with the years instead of fading. He left it at first with a light heart, but later on he was homesick for it; and as the years went by he felt more than ever its mysterious attraction, so that one of his last wishes was to see his grave dug in the shadow of his cradle. But we will not wrong feelings so delicate by seeking to interpret them; we will let him speak for himself.

Leaving our native village is no very serious matter when we are children. We even look on it as a sort of holiday. We are going to see something new, those magic pictures of our dreams. With age come regrets; and the close of life is

spent in stirring up old memories. Then, in our dreamy moods, the beloved village reappears, embellished, transfigured by the glow of those first impressions; and the mental image, superior to the reality, stands out in amazingly clear relief. The past, the far-off past, was only yesterday; we see it, we touch it.

For my part, after three-quarters of a century, I could walk with my eyes closed straight to the flat stone where I first heard the soft chiming note of the Midwife Toad; yes, I should find it to a certainty, if time, which devastates all things, even the homes of Toads, has not moved it or perhaps left it in ruins.

I see, on the margin of the brook, the exact position of the alder-trees whose tangled roots, deep under the water, were a refuge for the Crayfish. I should say:

"It is just at the foot of this tree that I had the unutterable bliss of catching a beauty. She had horns so long . . . and enormous claws, full of meat, for I got her just at the right time."

I should go without faltering to the ash under whose shade my heart beat so loudly one sunny spring morning. I had caught sight of a sort of white, cottony ball among the branches. Peeping from the depths of the wadding was an anxious little head with a red hood to it. Oh, what unparalleled luck! It was a Goldfinch, sitting on her eggs.

I know my village thoroughly, though I quitted it so long ago; and I know hardly anything of the

towns to which the vicissitudes of life have brought me. An exquisitely sweet link binds us to our native soil; we are like the plant that has to be torn away from the spot where it put out its first roots. Poor though it be, I should love to see my own village again; I should like to leave my bones there.[1]

[1] *Souvenirs,* VIII., pp. 125-129. *Bramble-bees,* chap. xiii., "The Halicti: The Portress."

CHAPTER V

AT THE COLLEGE OF RODEZ

WE have learned what we may of the schoolboy of Saint-Léons. Let us follow him to the *Lycée* of Rodez, which he entered as a day-boy at the age of ten:

I come to the time when I was ten years old and at Rodez College. My functions as a serving-boy in the chapel entitled me to free instruction as a day-boarder. There were four of us in white surplices and red skull-caps and cassocks. I was the youngest of the party, and did little more than walk on. I counted as a unit; and that was about all, for I was never certain when to ring the bell or when to move the missal from one side of the altar to the other. I was all of a tremble when we gathered, two on this side, two on that, with genuflexions, in the middle of the sanctuary, to intone the *Domine, salvum fac regem* at the end of mass. Let me make a confession: tongue-tied with shyness, I used to leave it to the others.

Nevertheless, I was well thought of, for, in the school, I cut a good figure in composition and translation. In that classical atmosphere there was talk

of Procas, King of Alba, and of his two sons, Numitor and Amulius. We heard of Cynægirus, the strong-jawed man, who, having lost his two hands in battle, seized and held a Persian galley with his teeth, and of Cadmus the Phœnician, who sowed a dragon's teeth as though they were beans, and gathered his harvest in the shape of a host of armed men, who killed one another as they rose up from the ground. The only one who survived the slaughter was one as tough as leather, presumably the son of the big back grinder.

Had they talked to me about the man in the moon, I could not have been more startled. I made up for it with my animals, which I was far from forgetting amid this phantasmagoria of heroes and demigods. While honouring the exploits of Cadmus and Cynægirus, I hardly ever failed, on Sundays and Thursdays, to go and see if the cowslip or the yellow daffodil was making its appearance in the meadows, if the Linnet was hatching on the juniper-bushes, if the Cockchafers were plopping down from the wind-shaken poplars. Thus was the sacred spark kept aglow, ever brighter than before.[1]

At Rodez, as at Saint-Léons, natural objects provided him with the chief material of his recreations:

The thrice-blessed Thursday had come; our bit of translation was done, our dozen Greek roots had

[1] *Souvenirs*, VI., p. 60. *The Life of the Fly*, chap. vi., "My Schooling."

been learnt by heart; and we trooped down to the far end of the valley, so many bands of madcaps. With our trousers turned up to our knees, we exploited, artless fishermen that we were, the peaceful waters of the river, the Aveyron. What we hoped to catch was the Loach, no bigger than our little finger, but tempting, thanks to his immobility on the sand amid the water-weeds. We fully expected to transfix him with our trident, a fork.

This miraculous catch, the object of such shouts of triumph when it succeeded, was very rarely vouchsafed to us; the Loach, the rascal, saw the fork coming and with three strokes of his tail disappeared!

We found compensation in the apple-trees in the neighbouring pastures. The apple has from all time been the urchin's delight, above all when plucked from a tree which does not belong to him. Our pockets were soon crammed with the forbidden fruit.

Another distraction awaited us. Flocks of Turkeys were not rare, roaming at their own sweet will and gobbling up the Locusts around the farms. If no watcher hove in sight, we had great sport. Each of us would seize a Turkey, tuck her head under her wing, rock it in this attitude for a moment and then place her on the ground, lying on her side. The bird no longer budged. The whole flock of Turkeys was subjected to our hypnotic handling; and the meadow assumed the aspect of a battle-field strewn with the dead and dying.

And now look out for the farmer's wife! The

loud gobbling of the harassed birds had told her of our wicked pranks. She would run up armed with a whip. But we had good legs in those days! And we had a good laugh too, behind the hedges, which favoured our retreat!

How did we, the little Rodez schoolboys, learn the secret of the Turkey's slumber? It was certainly not in our books. Coming from no one knows where, indestructible as everything that enters into children's games, it was handed down, from time immemorial, from one initiate to another.

Things are just the same to-day in my village of Sérignan, where there are numbers of youthful adepts in the art of putting poultry to sleep. Science often has very humble beginnings. There is nothing to tell us that the mischief of a pack of idle urchins is not the starting-point of our knowledge of hypnosis.[1]

The incident of which we have just read was the starting-point of the investigations which Fabre was to undertake fifty years later concerning the artificial sleep of birds and insects.

If he had hearkened only to his passion for Nature, the schoolboy of Rodez would soon have become one of the most ardent disciples of the school of the woods; that is,

[1] *Souvenirs*, VII., pp. 29, 33. *The Glow-Worm and Other Beetles*, chap. XV., "Suicide or Hypnosis?"

he would have played truant. But he was, happily, from an early age, a worker; because industry was for him both a family inheritance and an imperious necessity. Had he not been sent to college on condition of winning prizes? Could he show himself an idle scholar when he saw his parents wearing themselves out in order to supply the needs of their family? Moreover, as he rose from class to class, the love of learning increased within him. Latin ceased to be repulsive, and became even wholly sympathetic, when he found, in the fifth class, thanks to the genius of Virgil, that it dignified the humble joys of rural life by the emphasis of skilfully chosen words and brilliant colours of the poet:

> By easy stages I came to Virgil, and was much smitten with Melibœus, Corydon, Menalcas, Damœtas, and the rest of them. The scandals of the ancient shepherds fortunately passed unnoticed; and within the frame in which the characters moved were exquisite details concerning the Bee, the Cicada, the Turtle-dove, the Crow, the Nanny-goat, and the golden broom. A veritable delight were these stories of the fields, sung in sonorous verse; and the Latin poet left a lasting impression on my classical recollections.[1]

[1] *Souvenirs*, VI., p. 61. *The Life of the Fly*, chap. vi., "My Schooling."

Traces of Virgil are often visible—more often than those of the other classical writers —in the work of Fabre. He loves to embellish his narratives with quotations borrowed from the writer of the *Bucolics* and the *Georgics,* and he loves also to evoke the happy days of his boyhood at Rodez behind the lineaments of the Virgilian idylls, which were far more akin to the taste of his age and the instinct of his genius than the *Metamorphoses* of Ovid or *Religion* of Louis Racine, who shared, with the Mantuan, the privilege of providing the young humanist of 1835 at the Rodez *lycée* with literary exercises.

All roads lead to Rome. It is enough that they do so. Without sacrificing any of the demands of the classics, by way of analogy or by way of antithesis, the child's mind was constantly escaping from his books toward the things of Nature and Life.

In its free, palpitating flight his thought kindled his imagination, and with indescribable emotion he began to touch upon more serious questions:

> The problem of life and that other one, with its dark terrors, the problem of death, at times passed through my mind. It was a fleeting obsession, soon forgotten by the mercurial spirits of

youth. Nevertheless, the tremendous question would recur, brought to mind by this incident or that.

Passing one day by a slaughter-house, I saw an Ox driven in by the butcher. I have always had an insurmountable horror of blood; when I was a boy, the sight of an open wound affected me so much that I would fall into a swoon, which on more than one occasion nearly cost me my life. How did I screw up courage to set foot in those shambles? No doubt, the dread problem of death urged me on. At any rate, I entered, close on the heels of the Ox.

With a stout rope round its horns, wet-muzzled, meek-eyed, the animal moves along as though making for the crib in its stable. The man walks ahead, holding the rope. We enter the hall of death, amid the sickening stench thrown up by the entrails scattered over the ground and the pools of blood. The Ox becomes aware that this is not his stable; his eyes turn red with terror; he struggles; he tries to escape. But an iron ring is there, in the floor, firmly fixed to a stone flag. The man passes the rope through it and hauls. The Ox lowers his head; his muzzle touches the ground. While an assistant keeps him in this position with the rope, the butcher takes a knife with a pointed blade; not at all a formidable knife, hardly larger than the one which I myself carry in my breeches-pocket. For a moment he feels with his fingers at the back of the animal's neck and then drives in the blade at the chosen spot. The great beast

gives a shiver and drops, as though struck by lightning: *procumbit humi bos,* as we used to say in those days.

I fled from the place like one possessed. Afterwards I wondered how it was possible, with a knife almost identical with that which I used for prizing open my walnuts and taking the skin off my chestnuts, with that insignificant blade, to kill an Ox and kill him so suddenly. No gaping wound, no blood spilt, not a bellow from the animal. The man feels with his finger, gives a jab, and the thing is done: the Bullock's legs double up under him.

This instantaneous death, this lightning-stroke, remained an awesome mystery to me. It was only later, very much later, that I learnt the secret of the slaughter-house, at a time when, in the course of my promiscuous reading, I was picking up a smattering of anatomy. The man had cut through the spinal marrow where it leaves the skull; he had severed what our physiologists have called the vital cord. To-day I might say that he had operated in the manner of the Wasps, whose lancet plunges into the nerve-centres.[1]

This gloomy picture of a sudden, terrifying, violent death may be compared with another which, in some respects, is even more tragic: that of the ruined home and the shat-

[1] *Souvenirs,* II., pp. 41-44, 46. *Hunting Wasps,* chap. XX., "A Modern Theory of Instinct."

tered life of the little Rodez schoolboy, who was to leave the town somewhat as he left the slaughter-house, bewildered by the catastrophe of which he had just been the witness and was soon to be the victim. At this point of his narrative his eyes are dim with tears and his voice is choked by a half-suppressed sob.

Then, suddenly, good-bye to my studies, good-bye to Tityrus and Menalcas! Ill-luck is swooping down on us, relentlessly. Hunger threatens us at home. And now, boy, put your trust in God; run about and earn your penn'orth of potatoes as best you can. Life is about to become a hideous inferno. Let us pass quickly over this phase.

Amid that lamentable chaos my love for the insect ought to have gone under. Not at all. It would have survived the raft of the *Medusa*. I still remember a certain Pine Cockchafer met for the first time. The plumes on her antennæ, her pretty pattern of white spots on a dark-brown ground were as a ray of sunshine in the gloomy wretchedness of the day.[1]

[1] *Souvenirs*, VI., p. 61. *The Life of the Fly*, chap. vi., "My Schooling."

CHAPTER VI

THE PUPIL TEACHER: AVIGNON (1841-43)

THE stroke of misfortune which suddenly interrupted Jean-Henri's studies at the Rodez *lycée* made him an exile from his father's house and banished him from his native countryside.

For the second time he was, as it were, dropped upon the road like Perrault's Tom Thumb. And the fairy-tale comes to life again in the *Odyssey* of the poor boy who wandered at random, picking up his food at hazard, facing misfortune with a stout heart, and smiling whenever he could at the poem of Nature, who always had some fresh surprise in store for him.

Who can fail to be moved by pity and admiration, beholding him set forth upon the broad, white highroads, a wandering child, all but lost, seeking his way, seeking his livelihood even, without other relief, in his extremity of distress, and almost without other food than his love of Nature and his pas-

sion for learning? See him, for example, on the day when, between Beaucaire and Nîmes, he contrived to make his dinner off a few bunches of grapes "plucked furtively at the edge of a field, after exchanging the poor remnant of his last halfpence for a little volume of Réboul's poems; soothing his hunger by intoxicating himself with the verses of the workman poet," [1] whose inspiration was of so noble and Christian a character.

The whole Fabre is in this trait of the needy, enraptured youth, who thinks nothing of hardships or of money provided he can find the wherewithal to assuage his thirst for knowledge and the ideal.

Nevertheless, it is true that he passed through many dark and painful hours at that period. But in the end "the good fortune that never deserts the valiant" opened the doors of the Normal College of Avignon for him. Having ventured to face the examination for a bursary, he won the latter with the greatest ease. There he found a first refuge from the uncertainties of the morrow, although he had not yet achieved his ideal, nor even that place in the sun which he was

[1] *Fabre, Poet of Science,* by G. V. Legros, translated by Bernard Miall (T. Fisher Unwin), p. 24.

striving to prepare for himself. Imagine "between four high walls a courtyard, a sort of bear-pit in which the scholars contend for room beneath the boughs of a plane-tree; and opening on to it, on every side, the class-rooms, like so many cages for wild beasts, devoid of daylight or air." This was the Normal College of Vaucluse.

The description recalls, in some respects, that which was given by a sometime pupil of the Normal College of Paris, M. René Doumic, on taking his seat in the Academy, in the place of Gaston Boissier: "I loved the Normal College, and I am still faithful in my attachment to it. I hope my recollections of it will not be thought lacking in piety if I state that the building in which they penned us up, young fellows of twenty, was the most dismal place that I have ever seen anywhere. This extraordinary building, by an architectural prodigy which I will not attempt to explain, turned all four sides to the north. In three years I do not think I ever saw a single ray of sunlight enter our lecture-rooms or the cloisters in which we used to wander like so many shades. A mournful daylight expired upon the grey, grimy walls. In short, it was not a cheerful place. But at Boissier's lectures all became

bright, full of animation and renewed life. It was a sudden metamorphoses."

At the Normal College of Vaucluse it was not the lectures given by the masters that transformed the abode of shades or the bears' cage into a centre of light and life for the budding biologist. It was something better than that. By good fortune the director of the College was broad-minded enough to allow him to employ in his own fashion all the time that was left to him after he had prepared his lessons and his exercises. We may imagine that he did not loiter over his classics. The school programme, for that matter, was not very heavy; the orthographic difficulties which complicated most of the exercises of the future schoolmasters were mere play to the ex-Latinist of the Rodez *lycée*. And "while all around him dictated passages were being minutely scanned with much searching of the dictionary, he examined, in the secrecy of his desk, the fruit of the oleander, the flower of the snapdragon, the sting of a Wasp, the wing-cover of a gardener-beetle." Thus he treated himself to a lecture of his own fashion whose charm and fascination greatly exceeded that of anything that the college could teach him.

So much so that he left the College more

in love than ever with insects and flowers, and thoroughly determined to fill what he considered to be one of the most serious deficiencies of official instruction.

Alas! there were many deficiencies in the education received by his masters which would have to be made good in order to complete the literary education which the professors of the Rodez *lycée* had begun to give him, and the scientific training which he had hardly commenced at the Normal College.

We must listen to his reminiscences of his career as pupil teacher, to the inventory of the scientific equipment of a schoolboy of 1840, to the story of his first and last lesson in chemistry, to see how poor he was in acquired knowledge and how rich in the desire for knowledge, before we can estimate the length of the road which he had to travel when he had passed through the classes of the College.

In my normal school, the scientific teaching was on an exceedingly modest scale, consisting mainly of arithmetic and odds and ends of geometry. Physics was hardly touched. We were taught a little meteorology, in a summary fashion: a word or two about a red moon, a white frost, dew, snow and wind; and, with this smattering of rustic physics, we were considered to know enough of the

subject to discuss the weather with the farmer and the ploughman.

Of natural history, absolutely nothing. No one thought of telling us anything about flowers and trees, which give such zest to one's aimless rambles, nor about insects, with their curious habits, nor about stones, so instructive with their fossil records. That entrancing glance through the windows of the world was refused us. Grammar was allowed to strangle life.

Chemistry was never mentioned either: that goes without saying. I knew the word, however. My casual reading, only half-understood for want of practical demonstration, had taught me that chemistry is concerned with the shuffle of matter, uniting or separating the various elements. But what a strange idea I formed of this branch of study! To me it smacked of sorcery, of alchemy and its search for the philosopher's stone. To my mind, every chemist, when at work, should have had a magic wand in his hand and the wizard's pointed, star-spangled cap on his head.

An important personage who sometimes visited the school, in his capacity as an honorary lecturer, was not the man to rid me of those foolish notions. He taught physics and chemistry at the grammar-school. Twice a week, from eight to nine o'clock in the evening, he held a free public class in an enormous building adjacent to our schoolhouse. This was the former Church of Saint-Martial, which has to-day become a Protestant meeting-house.

It was a wizard's cave certainly, just as I had pictured it. At the top of the steeple, a rusty weathercock creaked mournfully; in the dusk great Bats flew all around the edifice or dived down the throats of the gargoyles; at night Owls hooted upon the copings of the leads. It was inside, under the immensities of the vault, that my chemist used to perform. What infernal mixtures did he compound? Should I ever know?

It is the day for his visit. He comes to see us with no pointed cap: in ordinary garb, in fact, with nothing very queer about him. He bursts into our schoolroom like a hurricane. His red face is half-buried in the enormous stiff collar that digs into his ears. A few wisps of red hair adorn his temples; the top of his head shines like an old ivory ball. In a dictatorial voice and with wooden gestures, he questions two or three of the boys; after a moment's bullying, he turns on his heel and goes off in a whirlwind as he came. No, this is not the man, a capital fellow at heart, to inspire me with a pleasant idea of the things which he teaches.

Two windows of his laboratory look out upon the garden of the school. One can just lean on them; and I often go and peep in, trying to make out, in my poor brain, what chemistry can really be. Unfortunately, the room into which my eyes penetrate is not the sanctuary, but a mere outhouse where the learned implements and crockery are washed. Leaden pipes with taps run down the walls; wooden vats occupy the corners. Some-

times those vats bubble, heated by a spray of steam. A reddish powder, which looks like brick-dust, is boiling in them. I learn that the simmering stuff is a dyer's root, known as madder, which will be converted into a purer and more concentrated product. This is the master's pet study.

What I saw from the two windows was not enough for me. I wanted to see farther, into the very class-room. My wish was satisfied. It was the end of the scholastic year. A stage ahead of the others in the regular work, I had just obtained my certificate. I was free. A few weeks remain before the holidays. Shall I go and pass them out of doors, in all the gaiety of my eighteen summers? No, I will spend them at the school which, for two years past, has provided me with an untroubled roof and my daily crust. I will wait until a post is found for me. Employ my willing service as you think fit, do with me what you will; as long as I can study, I am indifferent to the rest.

The principal of the school, the soul of kindness, has grasped my passion for knowledge. He encourages me in my determination; he proposes to make me renew my acquaintance with Horace and Virgil, so long since forgotten. He knows Latin, he does; he will rekindle the dead spark by making me translate a few passages. He does more: he lends me an *Imitation,* with parallel texts in Latin and Greek. With the first text, which I am almost able to read, I will puzzle out the sec-

ond and thus increase the small vocabulary which I acquired in the days when I was translating *Æsop's Fables*. It will be all the better for my future studies. What luck! Board and lodging, ancient poetry, the classical languages, all the good things at once!

I did better still. Our science-master—the real, not the honorary one—who came twice a week to discourse of the rule of three and the properties of the triangle, had the brilliant idea of letting us celebrate the end of the school year with a feast of learning. He promised to show us oxygen. As a colleague of the chemist in the grammar-school, he obtained leave to take us to the famous laboratory and there to handle the object of his lesson under our very eyes. Oxygen, yes, oxygen, the all-consuming gas; that was what we were to see on the morrow. I could not sleep all night for thinking of it.

Thursday afternoon came at last. As soon as the chemistry lesson was over, we were to go for a walk to Les Angles, the pretty village over yonder, perched on a steep rock. We were therefore in our Sunday best, our out-of-door clothes: black frock-coats and tall hats. The whole school was there, some thirty of us, in the charge of an usher, who knew as little as we did of the things which we were about to see. We crossed the threshold of the laboratory, not without excitement. I entered a great nave with a Gothic roof, an old, bare church through which one's voice echoed, while the light penetrated discreetly through stained-glass

windows set in ribs and rosettes of stone. At the back were huge raised benches, with room for an audience of many hundreds; at the other end, where the choir once was, stood an enormous chimney-mantel; in the middle was a large massive table, corroded by the chemicals. At one end of this table was a tarred tub, lined inside with lead and filled with water. This, I at once learnt, was the pneumatic trough, the vessel in which the gases were collected.

The professor begins the experiment. He takes a sort of large, long glass bulb, bent abruptly in the region of the neck. This, he informs us, is a retort. He pours into it, from a screw of paper, some black stuff that looks like powdered charcoal. This is manganese dioxide, the master tells us. It contains in abundance, in a condensed state and retained by combination with the metal, the gas which we propose to obtain. An oily-looking liquid, sulphuric acid, an excessively powerful agent, will set it at liberty. Thus filled, the retort is placed on a lighted stove. A glass tube brings it into communication with a bell-jar full of water on the shelf of the pneumatic trough. Those are all the preparations. What will be the result? We must wait for the action of heat.

My fellow-pupils gather eagerly round the apparatus, cannot come close enough to it. Some of them play the part of the fly on the wheel and glory in contributing to the success of the experiment. They straighten the retort, which is leaning to one side; the blow with their mouths on the

coals in the stove. I do not care for these familiarities with the unknown.

Suddenly, bang! And there is running and stamping and shouting and cries of pain! What has happened? I rush up from the back of the room. The retort has burst, squirting its boiling vitriol in every direction. The wall opposite is all stained with it. Most of my fellow-pupils have been more or less struck. One poor youth has had the splashes full in his face, right into his eyes. He is yelling like a madman. With the help of a friend who has come off better than the others, I drag him outside by main force, take him to the sink, which fortunately is close at hand, and hold his face under the tap. This swift ablution serves its purpose. The horrible pain begins to be allayed, so much so that the sufferer recovers his senses and is able to continue the washing process for himself.

My prompt aid certainly saved his sight. A week later, with the help of the doctor's lotions, all danger was over. How lucky it was that I took it into my head to keep some way off! My isolation, as I stood looking into the glass case of chemicals, left me all my presence of mind, my readiness of resource. What are the others doing, those who got splashed through standing too near the chemical bomb? I return to the lecture-hall. It is not a cheerful spectacle. The master has come off badly: his shirt-front, his waistcoat and trousers are covered with smears, which are all smouldering and burning into holes. He hurriedly

divests himself of a portion of his dangerous raiment. Those of us who possess the smartest clothes lend him something to put on so that he can go home decently.

One of the tall, funnel-shaped glasses which I was admiring just now is standing, full of ammonia, on the table. All, coughing and snivelling, dip their handkerchiefs into it and rub the moist rag over their hats and coats. In this way the red stains left by the horrible compound are made to disappear. A drop of ink will presently restore the colour completely.

And the oxygen? There was no more question, I need hardly say, of that. The feast of learning was over. Never mind: the disastrous lesson was a mighty event for me. I had been inside the chemist's laboratory; I had had a glimpse of those wonderful jars and tubes. In teaching what matters most is not the thing taught, whether well or badly grasped: it is the stimulus given to the pupil's latent aptitudes; it is the fulminate awaking the slumbering explosives. One day, I shall obtain on my own account that oxygen which ill-luck has denied me; one day, without a master, I shall yet learn chemistry. I do not recommend that method to anybody. Happy the man who is guided by a master's word and example! He has a smooth and easy road before him, lying straight ahead. The other follows a rugged path, in which his feet often stumble; he goes groping into the unknown and loses his way. To recover the right road, if want of success have not discouraged him,

he can rely only on perseverance, the sole compass of the poor.[1]

We shall show what the perseverance of this son of Aveyron peasants was capable of achieving, and after realising how little he got from his masters we shall marvel to see what he acquired by dint of personal industry and application.

[1] *Souvenirs*, x., pp. 323-331. *The Life of the Fly*, chap. xix., "A Memorable Lesson."

CHAPTER VII

THE SCHOOLMASTER: CARPENTRAS

ONLY eighteen years old, he left the Normal College with his diploma, his *brevet supérieur*, and began his career as primary schoolmaster in the College of Carpentras. Merit, it seems, was recognised, and at the outset fortune did not treat him so badly. We may judge of this the better from the picture which the ex-schoolmaster has given us of his first beginnings at the College:

It was when I first began to teach, about 1843. I had left the Normal School at Vaucluse some months before, with my diploma and all the simple enthusiasm of my eighteen years, and had been sent to Carpentras, there to manage the primary school attached to the College. It was a strange school, upon my word, notwithstanding its pompous title of "upper"; a sort of huge cellar oozing with the perpetual damp engendered by a well backing on it in the street outside. For light there was the open door, when the weather permittted, and a narrow prison-window, with iron bars and lozenge panes set in lead. By way of benches there

was a plank fastened to the wall all round the room, while in the middle was a chair bereft of its straw, a blackboard and a stick of chalk.

Morning and evening, at the sound of the bell, there came rushing in some fifty young imps who, having shown themselves hopeless dunces with their Cornelius Nepos, had been relegated, in the phrase of the day, to "a few good years of French." Those who had found *mensa* too much for them came to me to get a smattering of grammar. Children and strapping lads were there, mixed up together, at very different educational stages, but all incorrigibly agreed to play tricks upon the master, the boy-master, who was no older than some of them, or even younger.

To the little ones I gave their first lessons in reading; the intermediate ones I showed how they should hold their pen to write a few lines of dictation on their knees; to the big ones I revealed the secrets of fractions and even the mysteries of Euclid. And to keep this restless crowd in order, to give each mind work in accordance with its strength, to keep attention aroused, and lastly to expel dulness from the gloomy room, whose walls dripped melancholy even more than dampness, my one resource was my tongue, my one weapon my stick of chalk.

Things improved, however: a master came, and came to stay. I myself secured tables on which my pupils were able to write instead of scribbling on their knees; and, as my class was daily increasing in numbers, it ended by being divided into two. As soon as I had an assistant to look after the

younger boys, things assumed a different aspect.

A weeding-out takes place in my crowd of scatterbrains. I keep the older, the more intelligent ones; the others are to have a term in the preparatory division. From that day forward things are different. Curriculum there is none. In those happy times the master's personality counted for something; there was no such thing as the scholastic piston working with the regularity of a machine. It was left for me to act as I thought fit. Well, what should I do to make the school earn its title of "upper primary"?

Why, of course! Among other things, I shall do some chemistry! My reading has taught me that it does no harm to know a little chemistry, if you would make your furrows yield a good return. Many of my pupils come from the country; they will go back to it to improve their land. Let us show them what the soil is made of and what the plant feeds on. Others will follow industrial careers; they will become tanners, metal-founders, distillers; they will sell cakes of soap and kegs of anchovies. Let us show them pickling, soap-making, stills, tannin, and metals. Of course I know nothing about these things, but I shall learn, all the more so as I shall have to teach them to the boys; and your schoolboy is a little demon for jeering at the master's hesitation.

As it happens, the College boasts a small laboratory, containing just what is strictly indispensable: a receiver, a dozen glass balloons, a few tubes and a niggardly assortment of chemicals. That will

do, if I can have the run of it. But the laboratory is a sanctum reserved for the use of the sixth form. No one sets foot in it except the professor and his pupils preparing for their degree. For me, the outsider, to enter that tabernacle with my band of young imps would be most unseemly; the rightful occupant would never think of allowing it. I feel it myself: elementary teaching dare not aspire to such familiarity with the higher culture. Very well, we will not go there, so long as they will lend me the things.

I confide my plan to the principal, the supreme dispenser of those riches. He is a classics man, knows hardly anything of science—at that time held in no great esteem—and does not quite understand the object of my request. I humbly insist and exert my powers of persuasion. I discreetly emphasise the real point of the matter. My group of pupils is a numerous one. It takes more meals at the schoolhouse—the real concern of a principal—than any other section of the College. This group must be encouraged, lured on, increased if possible. The prospect of disposing of a few more platefuls of soup wins the battle for me; my request is granted. Poor Science! All that diplomacy to gain your entrance among the despised ones, who have not been nourished on Cicero and Demosthenes!

I am authorised to move, once a week, the material required for my ambitious plans. From the first floor, the sacred dwelling of the scientific things, I shall take them down to a sort of cellar where I give my lessons. The troublesome part

is the pneumatic trough. It has to be emptied before it is carried downstairs and to be filled again afterwards. A day-scholar, a zealous acolyte, hurries over his dinner and comes to lend me a hand an hour or two before the class begins. We effect the move between us.

What I am after is oxygen, the gas which I once saw fail so lamentably. I thought it all out at my leisure, with the help of a book. I will do this, I will do that, I will go to work in this or the other fashion. Above all, we will run no risks, perhaps of blinding ourselves; for it is once more a question of heating manganese dioxide with sulphuric acid. I am filled with misgivings at the recollection of my old school-fellow yelling like mad. Who cares? Let us try for all that: fortune favours the brave! Besides, we will make one prudent condition from which I shall never depart: no one but myself shall come near the table. If an accident happen, I shall be the only one to suffer; and, in my opinion, it is worth a burn or two to make acquaintance with oxygen.

Two o'clock strikes, and my pupils enter the class-room. I purposely exaggerate the likelihood of danger. They are all to stay on their benches and not stir. This is agreed. I have plenty of elbow-room. There is no one by me, except my acolyte, standing by my side, ready to help me when the time comes. The others look on in profound silence, reverent towards the unknown.

Soon the bubbles come "gloo-glooing" through the water in the bell-jar. Can it be my gas? My

heart beats with excitement. Can I have succeeded without any trouble at the first attempt? We will see. A candle blown out that moment and still retaining a red tip to its wick is lowered by a wire into a small test-jar filled with my product. Capital! The candle lights with a little explosion and burns with extraordinary brilliancy. It is oxygen right enough.

The moment is a solemn one. My audience is astounded and so am I, but more at my own success than at the relighted candle. A puff of vainglory rises to my brow; I feel the fire of enthusiasm run through my veins. But I say nothing of these inner sensations. Before the boys' eyes, the master must appear an old hand at the things he teaches. What would the young rascals think of me if I allowed them to suspect my surprise, if they knew that I myself am beholding the marvellous subject of my demonstration for the first time in my life? I should lose their confidence, I should sink to the level of a mere pupil.

Sursum corda! Let us go on as if chemistry were a familiar thing to me. It is the turn of the steel ribbon, an old watch-spring rolled corkscrew-fashion and furnished with a bit of tinder. With this simple lighted bait, the steel should take fire in a jar filled with my gas. And it does burn; it becomes a splendid firework, with cracklings and a blaze of sparks and a cloud of rust that tarnishes the jar. From the end of the fiery coil a red drop breaks off at intervals, shoots quivering through the layer of water left at the bottom of the vessel

and embeds itself in the glass which has suddenly grown soft. This metallic tear, with its indomitable heat, makes every one of us shudder. They stamp and cheer and applaud. The timid ones place their hands before their faces and dare not look except through their fingers. My audience exults; and I myself triumph. Ha, my friend, isn't it grand, this chemistry!

All of us have red-letter days in our lives. Some, the practical men, have been successful in business; they have made money and hold their heads high in consequence. Others, the thinkers, have gained ideas; they have opened a new account in the ledger of nature and silently taste the hallowed joys of truth. One of my great days was that of my first acquaintance with oxygen. On that day, when my class was over and all the materials put back in their place, I felt myself grow several inches taller. An untrained workman, I had shown, with complete success, that which was unknown to me a couple of hours before. No accident whatever, not even the least stain of acid.

It is, therefore, not so difficult nor so dangerous as the pitiful finish of the Saint-Martial lesson might have led me to believe. With a vigilant eye and a little prudence, I shall be able to continue. The prospect is enchanting.

And so, in due season, comes hydrogen, carefully contemplated in my reading, seen and reseen with the eye of the mind before being seen with the eyes of the body. I delight my little rascals by making the hydrogen-flame sing in a glass tube,

which trickles with the drops of water resulting from the combustion; I make them jump with the explosions of the thunderous mixture. Later, I show them, with the same invariable success, the splendours of phosphorus, the violent powers of chlorine, the loathsome smells of sulphur, the metamorphoses of carbon, and so on. In short, in a series of lessons, the principal non-metallic elements and their compounds are passed in review during the course of the year.

The thing was bruited abroad. Fresh pupils came to me, attracted by the marvels of the school. Some more places were laid in the dining-hall; and the principal, who was more interested in the profits on his beans and bacon than in chemistry, congratulated me on this accession of boarders.[1]

However, we must make it clear, without wishing in any way to belittle the importance or the magical results of chemistry, that the latter was not the only attraction of the young schoolmaster's teaching, any more than it was the sole subject on his programme.

Among the other subjects taught, one in especial had the power of interesting master and pupil alike:

This was open-air geometry, practical surveying. The College had none of the necessary outfit; but, with my fat pay—seven hundred francs a year, if

[1] *Souvenirs*, x., 332-336. *The Life of the Fly*, chap. xix., "A Memorable Lesson."

you please!—I could not hesitate over the expense. A surveyor's chain and stakes, arrows, level, square, and compass were bought with my money. A microscopic graphometer, not much larger than the palm of one's hand and costing perhaps five francs, was provided by the establishment. There was no tripod to it; and I had one made. In short, my equipment was complete.

And so, when May came, once every week we left the gloomy schoolroom for the fields. It was a regular holiday. The boys disputed for the honour of carrying the stakes, divided into bundles of three; and more than one shoulder, as we walked through the town, felt the reflected glory of those erudite rods. I myself—why conceal the fact?—was not without a certain satisfaction as I piously carried that most delicate and precious apparatus, the historic five-franc graphometer. The scene of operations was an untilled, flinty plain, a *harmas,* as we call it in the district. Here, no curtain of green hedges or shrubs prevented me from keeping an eye upon my staff; here—an indispensable condition—I had not the irresistible temptation of the unripe apricots to fear for my scholars. The plain stretched far and wide, covered with nothing but flowering thyme and rounded pebbles. There was ample scope for every imaginable polygon; trapezes and triangles could be combined in all sorts of ways. The inaccessible distances had ample elbow-room; and there was even an old ruin, once a pigeon-house, that lent its perpendicular to the graphometer's performances.

These exercises in open-air geometry, which had their charm, discounted beforehand, had also their delightful surprises and unexpected consequences which place them among the happiest experiences of the life which we are describing:

Well, from the very first day, my attention was attracted by something suspicious. If I sent one of the boys to plant a stake, I would see him stop frequently on his way, bend down, stand up again, look about and stoop once more, neglecting his straight line and his signals. Another, who was told to pick up the arrows, would forget the iron pin and take up a pebble instead; and a third, deaf to the measurements of angles, would crumble a clod of earth between his fingers. Most of them were caught licking a bit of straw. The polygon came to a full stop, the diagonals suffered. What could the mystery be?

I inquired; and everything was explained. A born searcher and observer, the scholar had long known what the master had not yet heard of, namely, that there was a big black Bee who made clay nests on the pebbles of the *harmas*. These nests contained honey; and my surveyors used to open them and empty the cells with a straw. The honey, although rather strong-flavoured, was most acceptable. I acquired a taste for it myself and joined the nest-hunters, putting off the polygon till later. It was thus that I first saw Réaumur's

Mason Bee,[1] knowing nothing of her history and nothing of her historian.

The magnificent Bee herself, with her dark-violet wings and black-velvet raiment, her rustic edifices on the sun-blistered pebbles amid the thyme, her honey, providing a diversion from the severities of the compass and the square, all made a great impression on my mind; and I wanted to know more than I had learnt from the schoolboys, which was just how to rob the cells of their honey with a straw. As it happened, my bookseller had a gorgeous work on insects for sale. It was called *Histoire naturelle des animaux articulés,* by de Castelnau, E. Blanchard, and Lucas, and boasted a multitude of most attractive illustrations; but the price of it, the price of it! No matter: was not my splendid income supposed to cover everything, food for the mind as well as food for the body? Anything extra that I gave to the one I could save upon the other; a method of balancing painfully familiar to those who look to science for their livelihood. The purchase was effected. That day my

[1] *Chalicodoma,* meaning a house of pebbles, concrete or mortar, would be a most satisfactory title, were it not that it has an odd sound to any one unfamiliar with Greek. The name is given to bees who build their cells with materials similar to those which we employ for our own dwellings. The work of these insects is masonry; only it is turned out by a rustic mason more used to hard clay than to hewn stone. Réaumur, who knew nothing of scientific classification—a fact which makes many of his papers very difficult to understand—named the worker after her work and called our builders in dried clay Mason Bees, which describes them exactly.

professional emoluments were severely strained: I devoted a month's salary to the acquisition of the book. I had to resort to miracles of economy for some time to come before making up the enormous deficit.

The book was devoured; there is no other word for it. In it I learnt the name of my black Bee; I read for the first time various details of the habits of insects; I found, surrounded in my eyes with a sort of halo, the revered names of Réaumur, Huber, and Léon Dufour; and, while I turned over the pages for the hundredth time, a voice within me seemed to whisper:

"You also shall be of their company!" [1]

[1] *Souvenirs*, I., pp. 278-280. *The Mason Bees*, chap. i., "The Mason Bee."

CHAPTER VIII

THE SCHOOLMASTER: CARPENTRAS (CONTINUED)

IF he had hearkened only to his tastes, the young schoolmaster of Carpentras would have devoted to the world of animals all the time that was not taken up by his pupils. But his profession itself and the requirements of his future prevented him from following the dominant attraction unchecked. He had formed a resolve "to raise himself above the level of the primary school, which at that time barely fed its teachers," and to make a place for himself in the ranks of secondary instruction. He had, therefore, to renounce his natural history, since that as yet had no place in the curriculum, and he had to take up mathematics.

So we see him submerged in conic sections and the differential and integral calculus, without a guide, without advice, confronted for days on end by some obscure difficulty which tenacious meditation eventually robbed of its mystery. Mathematics, however,

formed only the first part of his programme, which comprised also physics and chemistry. These, no doubt, were less abstruse sciences, but the necessary equipment was also less simple. He needed a laboratory; he could not run to the expense of one; so he made one, an "impossible" one, by force of industry.

In this desperate struggle what became of the favourite branch of science of this great nature-lover? It was necessarily sacrificed.

"I reprimanded myself," he says, "at the slightest longing for emancipation, fearing to let myself be seduced by some new grass, some unknown beetle. I did violence to myself. My books on natural history were condemned to oblivion, relegated to the bottom of a trunk."

A fine lesson in perseverance in work and sacrifice, which all those who are inspired by some noble desire or merely by some legitimate ambition will find useful and comforting to contemplate:

> "Qui studet optatam cursu contingere metam
> Multa tulit fecitque puer, sudavit et alsit;
> Abstinuit venere et vino." [1]

But this matter must be expounded in greater detail, were it only to confirm the

[1] HORACE, *Ars Poetica*, 412.

courage of other students disinherited by fortune, reduced as was Fabre to shaping themselves in the "harsh school of isolation." They will witness miracles of perseverance; and they will realise that opportunities of exercising the mind and strengthening the will are seldom lacking to those who understand how to seize them.

When I left the Normal School, my stock of mathematics was of the scantiest (writes Fabre). How to extract a square root, how to calculate and prove the surface of a sphere: these represented to me the culminating points of the subject. Those terrible logarithms, when I happened to open a table of them, made my head swim, with their columns of figures; actual fright, not unmixed with respect, overwhelmed me on the very threshold of that arithmetical cave. Of algebra I had no knowledge whatever. I had heard the name; and the syllables represented to my poor brain the whole whirling legion of the abstruse.

Besides, I felt no inclination to decipher the alarming hieroglyphics. They made one of those indigestible dishes which we confidently extol without touching them. I greatly prefer a fine line of Virgil, whom I was now beginning to understand; and I should have been surprised indeed had any one told me that, for long years to come, I should be an enthusiastic student of the formidable science. Good fortune procured me my first lesson

in algebra, a lesson given and not received, of course.

A young man of about my own age came to me and asked me to teach him algebra. He was preparing for his examination as a civil engineer; and he came to me because, ingenuous youth that he was, he took me for a well of learning. The guileless applicant was very far out in his reckoning.

His request gave me a shock of surprise, which was forthwith repressed on reflection:

"I give algebra lessons?" said I to myself. "It would be madness: I don't know anything about it!"

And I left it at that for a moment or two, thinking hard, drawn now this way, now that by my indecision:

"Shall I accept? Shall I refuse?" continued the inner voice.

Pooh, let's accept! An heroic method of learning to swim is to leap boldly into the sea. Let us hurl ourselves head first into the algebraical gulf; and perhaps the imminent danger of drowning will call forth efforts capable of bringing me to land. I know nothing of what he wants. It makes no difference: let's go ahead and plunge into the mystery. I shall learn by teaching.

It was a fine courage that drove me full tilt into a province which I had not yet thought of entering. My twenty-year-old confidence was an incomparable lever.

"Very well," I replied. "Come the day after to-morrow at five, and we'll begin."

This twenty-four hours' delay concealed a plan. It secured me the respite of a day, the blessed Thursday, which would give me time to collect my forces.

Thursday comes. The sky is grey and cold. In this horrid weather a grate well-filled with coke has its charms. Let's warm ourselves and think.

Well, my boy, you've landed yourself in a nice predicament! How will you manage to-morrow? With a book, plodding all through the night, if necessary, you might scrape up something resembling a lesson, just enough to fill the dread hour more or less. Then you could see about the next: sufficient for the day is the evil thereof. But you haven't the book. And it's no use running out to the bookshop. Algebraical treatises are not current wares. You'll have to send for one, which will take a fortnight at least. And I've promised for to-morrow, for to-morrow certain! Another argument and one that admits of no reply: funds are low; my last pecuniary resources lie in the corner of a drawer. I count the money: it amounts to twelve sous, which is not enough.

Must I cry off? Rather not! One resource suggests itself: a highly improper one, I admit, not far removed, indeed, from larceny. O quiet paths of algebra, you are my excuse for this venial sin! Let me confess the temporary embezzlement.

Life at my College is more or less cloistered. In return for a modest payment, most of us masters are lodged in the building; and we take our meals at the principal's table. The science-master, who is the big gun of the staff and lives in the town,

has nevertheless, like ourselves, his own two cells, in addition to a balcony, or leads, where the chemical preparations give forth their suffocating gases in the open air. For this reason, he finds it more convenient to hold his class here during the greater part of the year. The boys come to these rooms in winter, in front of a grate stuffed full of coke, like mine, and there find a blackboard, a pneumatic trough, a mantelpiece covered with glass receivers, panoplies of bent tubes on the walls and, lastly, a certain cupboard in which I remember seeing a row of books, the oracles consulted by the master in the course of his lessons.

"Among those books," said I to myself, "there is sure to be one on algebra. To ask the owner for the loan of it does not appeal to me. My amiable colleague would receive me superciliously and laugh at my ambitious aims. I am sure he would refuse my request."

I decide to help myself to the book which I should never get by asking. This is the half-holiday. The science-master will not put in an appearance to-day; and the key of my room is practically the same as his. I go, with eyes and ears on the alert. My key does not quite fit; it sticks a little, then goes in; and an extra effort makes it turn in the lock. The door opens. I inspect the cupboard and find that it does contain an algebra book, one of the big, fat books which men used to write in those days, a book nearly half a foot thick. My legs give way beneath me. You poor specimen of a housebreaker, suppose you were caught at it!

However, all goes well. Quick, let's lock the door again, and hurry back to our own quarters with the pilfered volume.

A chapter catches my attention in the middle of the volume; it is headed, *Newton's Binomial Theorem*. The title allures me. What can a binomial theorem be, especially one whose author is Newton, the great English mathematician who weighed the worlds? What has the mechanism of the sky to do with this? Let us read and seek for enlightenment. With my elbows on the table and my thumbs behind my ears, I concentrate all my attention.

I am seized with astonishment, for I understand! There are a certain number of letters, general symbols which are grouped in all manner of ways, taking their places here, there, and elsewhere by turns; there are, as the text tells me, arrangements, permutations, and combinations. Pen in hand, I arrange, permute, and combine. It is a very diverting exercise, upon my word, a game in which the test of the written result confirms the anticipations of logic and supplements the shortcomings of one's thinking-apparatus.

"It will be plain sailing," said I to myself, "if algebra is no more difficult than this."

I was to recover from the illusion later, when the binomial theorem, that light, crisp biscuit, was followed by heavier and less digestible fare. But, for the moment, I had no foretaste of the future difficulties, of the pitfalls in which one becomes more and more entangled the longer one persists

in struggling. What a delightful afternoon that was, before my fire, amid my permutations and combinations! By the evening, I had nearly mastered my subject. When the bell rang, at seven, to summon us to the common meal at the principal's table, I went downstairs puffed up with the joys of the newly-initiated neophyte. I was escorted on my way by *a, b,* and *c,* intertwined in cunning garlands.

Next day, my pupil is there. Blackboard and chalk, everything is ready. Not quite so ready is the master. I bravely broach my binomial theorem. My hearer becomes interested in the combinations of letters. Not for a moment does he suspect that I am putting the cart before the horse and beginning where we ought to have finished. I relieve the dryness of my explanations with a few little problems, so many halts at which the mind takes breath awhile and gathers strength for fresh flights.

We try together. Discreetly, so as to leave him the merit of the discovery, I shed a little light upon the path. The solution is found. My pupil triumphs; so do I, but silently, in my inner consciousness, which says:

"You understand, because you succeed in making another understand."

The hour passed quickly and very pleasantly for both of us. My young man was contented when he left me; and I no less so, for I perceived a new and original way of learning things.

The ingenious and easy arrangement of the bi-

nomial gave me time to tackle my algebra book from the proper commencement. In three or four days I had rubbed up my weapons. There was nothing to be said about addition and subtraction: they were so simple as to force themselves upon one at first sight. Multiplication spoilt things. There was a certain rule of signs which declared that minus multiplied by minus made plus. How I toiled over that wretched paradox! It would seem that the book did not explain this subject clearly, or rather employed too abstract a method. I read, reread, and meditated in vain: the obscure text retained all its obscurity. That is the drawback of books in general: they tell you what is printed in them and nothing more. If you fail to understand, they never advise you, never suggest an attempt along another road which might lead you to the light. The merest word would sometimes be enough to put you on the right track; and that word the books, hide-bound in a regulation phraseology, never give you.

My pupil was bound to suffer the effects. After an attempt at an explanation in which I made the most of the few gleams that reached me, I asked him:

"Do you understand?"

It was a futile question, but useful for gaining time. Myself not understanding, I was convinced beforehand that he did not understand either.

"No," he replied, accusing himself, perhaps, in his simple mind, of possessing a brain incapable of taking in those transcendental verities.

"Let us try another method."

And I start again this way and that way and yet another way. My pupil's eyes serve as my thermometer and tell me of the progress of my efforts. A blink of satisfaction announces my success. I have struck home, I have found the joint in the armour. The product of minus multiplied by minus surrenders its mysteries to us.[1]

The study of algebra was pursued in this fashion without any undue impediments as far as the pupil was concerned, but at the cost of a prodigious exertion of patience and penetration on the part of the primary schoolmaster who was so venturesome as to act as a professor of the higher mathematics. *Audaces fortuna juvat.* The young schoolmaster had not too greatly presumed on his powers. His pupil was accepted upon examination, and he himself was able to return the book to its place, having completely assimilated its contents.

But he had made too good a start to stop midway. He was burning with eagerness to attack geometry, which was not so unfamiliar to him, but of which he had yet a great deal to learn: "At my normal school," writes

[1] *Souvenirs*, IX, pp. 164-170. *The Life of the Fly*, chap. xii., "Mathematical Memories: The Binomial Theorem."

Fabre, "I had learnt a little elementary geometry under a master. From the first few lessons onwards, I rather enjoyed the subject. I divined in it a guide for one's reasoning faculties through the thickets of the imagination; I caught a glimpse of a search after truth that did not involve too much stumbling on the way, because each step forward is well braced by the step already taken. We start from a brilliantly-lighted spot and gradually travel farther and farther into the darkness, which kindles into radiance as it sheds fresh beams of light for a higher ascent.

It is an excellent thing to regard geometry as what it really is, before all things: a superb intellectual gymnastic. By forcing the mind to proceed from the known to the unknown, always explaining what follows in the light of what has gone before, it exercises it and familiarises it with the logical laws of thought. To be sure, "it does not give us ideas, those delicate flowers which unfold one knows not how, and are not able to flourish in every soil," but it teaches us to present them in a lucid and orderly manner. Fabre tells us:

At that time, the College in which, two years before, I had made my first appearance as a teacher

had just halved the size of its classes and largely increased its staff. The newcomers all lived in the building, like myself, and we had our meals in common at the principal's table. I had as a neighbour, in the next cell to mine, a retired quartermaster who, weary of barrack-life, had taken refuge in education. When in charge of the books of his company, he had become more or less familiar with figures; and it was now his ambition to take a mathematical degree. His cerebrum appears to have hardened while he was with his regiment. According to my dear colleagues, those amiable retailers of the misfortunes of others, he had already twice been plucked. Stubbornly, he returned to his books and exercises, refusing to be daunted by two reverses.

It was not that he was allured by the beauties of mathematics: far from it; but the step to which he aspired favoured his plans. He hoped to have his own boarders and dispense butter and vegetables to lucrative purpose.

I had often surprised our friend sitting, in the evening, by the light of a candle, with his elbows on the table and his head between his hands, meditating at great length in front of a big exercise-book crammed with cabalistic signs. From time to time, when an idea came to him, he would take his pen and hastily put down a line of writing wherein letters, large and small, were grouped without any grammatical sense. The letters x and y often recurred, intermingled with figures. Every row ended with the sign of equality and a naught.

Next came more reflection, with closed eyes, and a fresh row of letters arranged in a different order and likewise followed by a naught. Page after page was filled in this queer fashion, each line winding up with 0.

"What are you doing with all those rows of figures amounting to zero?" I asked him one day.

The mathematician gave me a leery look, picked up in barracks. A sarcastic droop in the corner of his eye showed how he pitied my ignorance. My colleague of the many naughts did not, however, take an unfair advantage of his superiority. He told me that he was working at analytical geometry.

The phrase had a strange effect upon me. I ruminated silently to this purpose: there was a higher geometry, which you learnt more particularly with combinations of letters in which x and y played a prominent part. How would the alphabetical signs, arranged first in one and then in another manner, give an image of actual things, an image visible to the eyes of the mind alone? It beat me.

"I shall have to learn analytical geometry some day," I said. "Will you help me?"

"I'm quite willing," he replied, with a smile in which I read his lack of confidence in my determination.

No matter: we struck a bargain that same evening. We would together break up the stubble of algebra and analytical geometry, the foundation of the mathematical degree; we would make com-

mon stock: he would bring long hours of calculation, I my youthful ardour. We would begin as soon as I had finished with my arts degree, which was my main preoccupation for the moment.

We begin in my room, in front of a blackboard. After a few evenings, prolonged into the peaceful watches of the night, I become aware, to my great surprise, that my teacher, the past master in these hieroglyphics, is really, more often than not, my pupil. He does not see the combinations of the abscissæ and ordinates very clearly. I make bold to take the chalk in hand myself, to seize the rudder of our algebraical boat. I comment on the book, interpret it in my own fashion, expound the text, sound the reefs, until daylight comes and leads us to the haven of the solution. Besides, the logic is so irresistible, it is all such easy going and so lucid that often one seems to be remembering rather than learning.

And so we proceed, with our positions reversed. My comrade—I can now allow myself to speak of him on equal terms—my comrade listens, suggests objections, raises difficulties which we try to solve in unison.

After fifteen months of this exercise, we went up together for our examination at Montpellier; and both of us received our degrees as bachelors of mathematical science. My companion was a wreck; I, on the other hand, had refreshed my mind with analytical geometry.[1]

[1] *Souvenirs*, IX, pp. 172-183 *passim*. *The Life of the*

The quartermaster declared himself satisfied with this achievement. Analytic geometry did not precisely strike him as a recreation. He knew enough of it for what he had to do; he did not want to know any more.

In vain I hold out the glittering prospect of a new degree, that of licentiate of mathematical science, which would lead us to the splendours of the higher mathematics and initiate us into the mechanics of the heavens: I cannot prevail upon him, cannot make him share my audacity. He calls it a mad scheme, which will exhaust us and come to nothing. I am free to go and break my neck in distant countries; he is more prudent and will not follow me.

My partner, therefore, leaves me. Henceforth, I am alone, alone and wretched. There is no one left with whom I can sit up and thresh out the subject in exhilarating discussion.[1]

And now let us note the words and the emotions with which he approaches for the last time, in his declining years, this town of Carpentras, where, from his earliest

Fly, chap. xii., "Mathematical Memories: The Binomial Theorem."

[1] *Souvenirs,* IX., p. 184 *passim. The Life of the Fly,* chap. xii., "Mathematical Memories: The Binomial Theorem."

youth, he suffered so greatly and laboured so valiantly:

Once more, here am I, somewhat late in life, at Carpentras, whose rude Gallic name sets the fool smiling and the scholar thinking. Dear little town where I spent my twentieth year and left the first bits of my fleece upon life's bushes, my visit of to-day is a pilgrimage; I have come to lay my eyes once more upon the place which saw the birth of the liveliest impressions of my early days. I bow, in passing, to the old College where I tried my prentice hand as a teacher. Its appearance is unchanged; it still looks like a penitentiary. Those were the views of our mediæval educational system. To the gaiety and activity of boyhood, which were considered unwholesome, it applied the remedy of narrowness, melancholy, and gloom. Its houses of instruction were, above all, houses of correction. The freshness of Virgil was interpreted in the stifling atmosphere of a prison. I catch a glimpse of a yard between four high walls, a sort of bear-pit, where the scholars fought for room for their games under the spreading branches of a plane-tree. All around were cells that looked like horse-boxes, without light or air; those were the class-rooms. I speak in the past tense, for doubtless the present day has seen the last of this academic destitution.

Here is the tobacco-shop where, on Wednesday evening, coming out of the college, I would buy on credit the wherewithal to fill my pipe and thus

to celebrate on the eve the joys of the morrow, that blessed Thursday [1] which I considered so well employed in solving difficult equations, experimenting with new chemical reagents, collecting and identifying my plants. I made my timid request, pretending to have come out without my money, for it is hard for a self-respecting man to admit that he is penniless. My candour appears to have inspired some little confidence; and I obtained credit, an unprecedented thing, with the representative of the revenue.

How I should love to see that room again where I pored over differentials and integrals, where I calmed my poor burning head by gazing at Mont Ventoux, whose summit held in store for my coming expedition [2] those denizens of Arctic climes, the saxifrage and the poppy! And to see my familiar friend, the blackboard, which I hired at five francs a year from a crusty joiner, that board whose value I paid many times over, though I could never buy it outright, for want of the necessary cash! The conic sections which I described on that blackboard, the learned hieroglyphics! [3]

Fabre has somewhere written, lamenting the dearth of family reminiscences which

[1] The weekly half-holiday in the French schools.—A. T. DE M.

[2] *The Hunting Wasps,* chap. xi., "An Ascent of Mont Ventoux."

[3] *Souvenirs,* III., pp. 191-193. *The Life of the Fly,* chap. iv., "Larval Dimorphism."

does not enable him to go back beyond the second generation of his ancestry, this touching passage, full of modesty and filial feeling: "The populace has no history. Strangled by the present, it cannot give its mind to cherishing the memories of the past." Yet how instructive would those records be.

Let us bow our heads before this child of the peasantry who labours so unremittingly and drives so deep a furrow; let us bow our heads before this humble primary schoolmaster who seeks to uplift himself, not as so many have done, by futile political agitation or the criminal fatuities of irreligion, but solely by virtue of knowledge and personal worth.

We shall see later on with what vindictive energy Fabre scourges the pseudo-scientists, "hateful malefactors," *maufatan de malur,* who, in the name of a false science, rob men's souls of the true and ancient Christian faith, thereby leading society toward the most terrible catastrophes. For the moment our only desire is to do homage to our worthy schoolmasters in the person of one of their old comrades who has become one of our greatest national glories. There are others, too, among us who have exalted by their virtues or their talents the humble na-

ture of their origin or their calling. Of such, as every Frenchman knows, to mention only one of the best known and best beloved, is the author of the *Poésie des Bêtes,* of *Voix rustiques,* of *La Bonne Terre,* of *Le Clocher,* etc.—François Fabié, that poet who, by his original style, his career, and his genius, which has been too much obscured by his modesty, may in so many respects be compared with Jean-Henri Fabre.[1] Of such, too, and among the most eminent writers of the *language d'oc,* is Antonin Perbosc,[2] who does honour to our primary schools, in one of which he is still teaching, by the remarkable works of literature which place him beside his friend, the Abbé Besson,[3] in the first rank of the *Occitanian Félibrige.*

[1] M. Fabié was never officially a schoolmaster, but he was trained as one, and was a pupil at the Normal College at Rodez.

[2] M. Perbosc is a schoolmaster at Lavilledien (Tarnet-Garonne). He has published through Privat of Toulouse: *Lo Got occitan, Cansous del Got occitan, Contes populars Gascons, Guilhem de Tolosa, Remembransa, l'Arada,* etc., and has repeatedly been crowned by the *Académie des Jeux Floraux* of Toulouse.

[3] M. Besson is also a laureate of the *Académie des Jeux Floraux,* and is at present Canon of Rodez. He has published through Carrère of Rodez: *Dal Brès à la Tounbo, Bagateletos, Besucarietos, Countes de la Tata Mannou, Countes de l'Ouncle Janet,* etc. This last volume is dedicated: *A mon Amic Antouni Perbosc.*

CHAPTER IX

THE PROFESSOR: AJACCIO

VIRGIL has truly said:

> *. . . labor omnia vincit*
> *Improbus.*

Persistent labour, in the service of a keen intelligence, knows no insuperable obstacles: it always achieves its ends. Success, accordingly, could not fail to befall the intrepid virtuosity of the youthful Carpentras schoolmaster. The degree of licentiate in the mathematical sciences was won, like the rest, at the point of the sword, and the valiant champion of the cosine and the laboratory was appointed Professor of Physics and Chemistry in the *lycée* of Ajaccio.

Here, by a happy concatenation of circumstances, and under the inward impulsion of the providential vocation, the destiny of the famous entomologist was to be finally determined.

In this novel environment, in " this para-

dise of glorious Nature," everything stimulated the alert curiosity of the predestined biologist; the sea, full of marvels, the beach, where the waves threw up such beautiful shells, the *maquis* of myrtle, arbutus, and lentisk! . . . This time the temptation was too great! He surrendered. His leisure was divided into two parts. One was still devoted to mathematics, the basis of his future in the university. The other was already spent in botanising and in investigating the wonders of the sea.

What a country! What magnificent investigations to be made! If I had not been obsessed by *x* and *y* I should have surrendered wholly to my inclinations!

Meanwhile Ajaccio received the visit of a famous Avignon botanist, Requien [1] by name, who, with a box crammed with paper under his arm, had long been botanising all over Corsica, pressing and drying specimens and distributing them to his friends. We soon became acquainted. I accompanied him in my free time on his explorations, and never did the master have a more attentive disciple. To tell the truth, Requien was not a man of learning so much as an enthusiastic col-

[1] Esprit Requien (1788-1851), a French naturalist and collector, director of the museum and botanical gardens at Avignon and author of several works on botany and conchology.—A. T. DE M.

lector. Very few would have felt capable of competing with him when it came to giving the name or the geographical distribution of a plant. A blade of grass, a pad of moss, a scab of lichen, a thread of seaweed: he knew them all. The scientific name flashed across his mind at once. What an unerring memory, what a genius for classification amid the enormous mass of things observed! I stood aghast at it. I owe much to Requien in the domain of botany. Had death spared him longer, I should doubtless have owed more to him, for his was a generous heart, ever open to the woes of novices.

In the following year I met Moquin-Tandon,[1] with whom, thanks to Requien, I had already exchanged a few letters on botany. The illustrious Toulouse professor came to study on the spot the flora which he proposed to describe systematically. When he arrived, all the hotel bedrooms were reserved for the members of the General Council which had been summoned; and I offered him board and lodging: a shake-down in a room overlooking the sea; fare consisting of lampreys, turbot, and sea-urchins; common enough dishes in that land of Cockayne, but possessing no small attraction for the naturalist, because of their novelty. My cordial proposal tempted him; he yielded to my bland-

[1] Horace Bénédict Alfred Moquin-Tandon (1804-63), a distinguished naturalist, for twenty years director of the botanical gardens at Toulouse. He was commissioned by the French Government in 1850 to compile a flora of Corsica, and is the author of several important works on botany and zoology.—A. T. DE M.

ishments; and there we were for a fortnight, chatting at table *de omni re scibili,* after the botanical excursion was over.

With Moquin-Tandon new vistas opened before me. Here it was no longer the case of a nomenclator with an infallible memory; he was a naturalist with far-reaching ideas, a philosopher who soared above petty details to comprehensive views of life, a writer, a poet who knew how to clothe the naked truth in the magic mantle of the glowing word. Never again shall I sit at an intellectual feast like that:

"Leave your mathematics," he said. "No one will take the least interest in your formulæ. Get to the beast, the plant; and, if, as I believe, the fever burns in your veins, you will find men to listen to you."

We made an expedition to the centre of the island, to Monte Renoso,[1] with which I was extremely familiar. I made the scientist pick the hoary everlasting (*Helichrysum frigidum*), which makes a wonderful patch of silver; the many-headed thrift, or mouflon-grass (*Armeria multiceps*), which the Corsicans call *erba muorone;* the downy marguerite (*Leucanthemum tomosum*), which, clad in wadding, shivers amid the snows; and many other rarities dear to the botanist. Moquin-Tandon was jubilant. I, on my side, was much more attracted and overcome by his words and his enthu-

[1] A mountain 7730 feet high, about twenty-five miles from Ajaccio.—A. T. DE M.

siasm than by the hoary everlasting. When we came down from the cold mountain-top, my mind was made up: mathematics would be abandoned.

On the day before his departure, he said to me:

"You interest yourself in shells. That is something, but it is not enough. You must look into the animal itself. I will show you how it's done."

And, taking a sharp pair of scissors from the family workbasket, and a couple of needles stuck into a bit of vine-shoot, which served as a makeshift handle, he showed me the anatomy of a Snail in a soup-plate filled with water. Gradually he explained and sketched the organs which he spread before my eyes. This was the only, never-to-be-forgotten lesson in natural history that I ever received in my life.[1]

Fabre was a wonderful and indefatigable self-teacher; a truly self-made man. The impulse had been given, but he had everything, or almost everything, to learn of the living world of Nature. The way was open, but the whole length of it had to be travelled. He trod it henceforth with a high courage, for he was marching beneath the star that the Master of minds had hung in the dawn of his days above the hills of Lavaysse; the

[1] *Souvenirs*, VI., pp. 63-66. *The Life of the Fly*, chap. vi., "My Schooling."

star that now, in the noon-day of life, shone through the passing mists of morning in the flawless Corsican sky, to guide his steps along the humblest tracks of the world of animals to the highest summits of human knowledge; ay, more, to those calm regions which are the dwelling of that uncreated Light and Life of which all the lights and all the lives of earth are but the pale reflections and feeble vestiges.

Not only do these reflections, which spontaneously pass through our mind, appear to us in harmony with the natural signification of the facts and the circumstances; we have the pleasant assurance that they are an epitome of the intimate feelings of our famous compatriot, as they are expressed in plain words in a thousand passages of his writing and as they were openly revealed in his conversation. We know, in short, that God and the activities of God in the world were questions which he was fond of considering, without regarding the world's opinion. His essays are full of the subject. But we will quote only one passage, which has the advantage of bringing us an echo of the jubilee celebrations which were celebrated at Sérignan while this volume was being written: When the venerable nonogenarian was

being fêted, one of his visitors asked him the question:

"Do you believe in God?"

To which he replied emphatically:

"I can't say I believe in God; I *see* Him. Without Him I understand nothing; without Him all is darkness. Not only have I retained this conviction; I have . . . *aggravated* or *ameliorated* it, whichever you please. Every period has its manias. *I regard Atheism as a mania.* It is the malady of the age. *You could take my skin from me more easily than my faith in God.*"

We may add, in order to throw some light upon the religion of the Aliborons of our villages, that the eminent biologist shares this belief with almost all our great scientists.

Corsica, which vouchsafed Fabre the revelation of his vocation as naturalist, inspired him also with such love and enthusiasm as he had never hitherto known.

There the intense impressionability which the little peasant of Aveyron received at birth could only be confirmed and increased. He felt that this superb and luxuriant nature was made for him, and that he was born for it; to understand and interpret it. He would lose himself in a delicious intoxication, amid the deep woodlands, the mountains rich with

scented flowers, wandering through the *maquis*, the myrtle scrub, through jungles of lentisk and arbutus; barely containing his emotion when he passed beneath the great secular chestnut-trees of Bastelica, with their enormous trunks and leafy boughs, whose sombre majesty inspired in him a sort of melancholy at once poetic and religious. Before the sea, with its infinite distances, he lingered in ecstasy, listening to the song of the waves, and gathering the marvellous shells which the snow-white breakers left upon the beach, and whose unfamiliar forms filled him with delight.

Not that he had time to make a very rich harvest of facts and observations in this wonderful country. The most visible result of his sojourn in the "isle of beauty," and the greatest benefit which he derived from it, seems to have been the fact that it brought his heart and mind—if I may be permitted the expression—into a state of entomological grace; I mean into a state of living and acting truly and beautifully in accordance with his vocation as a naturalist.

So it is that the name of this radiant daughter of the Mediterranean, which is so often written by his pen, seems to find its way thither in order to evoke one of the bright-

est and most joyful periods of his life, rather than to localise observations or circumstantial experiences.

There is, however, one of these reminiscences which, despite the extreme sobriety of the characteristics recorded, denotes, in the youthful entomologist, a mind peculiarly attentive to the slightest indications and the least movements of his future clients of the animal world. It deals with the Spider,[1] that ill-famed creature whom all hasten to crush underfoot as an odious and maleficent insect, but which the entomologist holds in high esteem for its talents as a spinner, its hunting expedients, and other highly interesting characteristics. The author has just explained, on behalf of the poor, supposedly poisonous insect, that for us its bite has no serious results, producing less effect than the bite of a gnat: "Nevertheless, a few are to be feared; and foremost among these is the Malmignatte, the terror of the Corsican peasantry."

By good fortune the only Tarantula that bit him in Corsica was the Tarantula of natural history.

But while he was not injured by the spiders,

[1] *Souvenirs*, I., pp. 178-180. *The Life of the Spider*, chap. ii., "The Black-bellied Tarantula."

he was less fortunate in defending himself against the mosquitoes, from whose bites he contracted an attack of malaria, in the myrtle *maquis* which he doubtless haunted more persistently than was wise.

This unfortunate incident persuaded him to apply for an appointment in France.

CHAPTER X

THE PROFESSOR: AVIGNON (1852-1870)

IN 1852 the Professor of Physics and Chemistry in the *lycée* of Ajaccio was transferred to the *lycée* of Avignon.

Fabre was not yet twenty-seven. His youth, his enthusiasm, his good humour, the simplicity of his manners, and the vivacity of his mind naturally endeared him to young people eager for knowledge and the ideal. A few lines from the *Souvenirs* give us some idea of the relations between master and pupils: "There were five or six of us: I was the oldest, their master, but still more their companion and their friend; they were young fellows with warm hearts and cheerful imaginations, overflowing with that springtide sap of life which makes us so expansive, so desirous of knowledge."

One guesses that he is speaking of one of those country walks on which, with a guide such as Fabre, everything became a source of instruction and an object of wonder and admiration.

These excursions into the world of the fields, the delight of his youth and his earliest childhood, were henceforth to form the first item on his programme of studies. Mathematics were dropped, as Moquin-Tandon had advised. Physics and chemistry were put in their proper place, in the teaching of the *lycée,* and the whole of the young professor's free energies were expended upon the research work of the naturalist.

Necessarily limited by his occupation as a teacher, his investigations could not at ordinary times extend beyond the neighbourhood of Avignon. One of his favourite localities for observation, by reason of its nearness and its entomological wealth, was the table-land of Les Angles, opposite the town on the right bank of the Rhône. Morning or evening, he made quick work of crossing the river and climbing the cliff which divides it from the barren table-land which he calls his "little Arabia Petræa."

Presently his Thursdays and holidays were devoted to more distant and more prolonged observations. His steps took him, by preference, down-stream from Avignon, along the right bank of the Rhône, opposite the embouchure of the Durance, to a spot known as the Bois des Issarts. Not that he was

drawn thither by the mossy carpets or the twilight of lofty forest trees which form the charm of our woodlands. The burning plains where the Cicada shrilled and the olive flourished know nothing of these delightful retreats, so full of shadow and coolness. Here is Fabre's own description:

The Bois des Issarts is a coppice of holm-oaks no higher than one's head and sparingly distributed in scanty clumps which, even at their feet, hardly temper the force of the sun's rays. When I used to settle myself in some part of the coppice suitable for my observations, on certain afternoons in the dog-days of July and August, I had the shelter of a large umbrella. If I neglected to furnish myself with this embarrassing adjunct to a long walk, my only resource against sunstroke was to lie down at full length behind some sandy knoll; and, when the veins in my temples were throbbing to bursting point, my last hope lay in putting my head down a rabbit-burrow. Such are one's means of keeping cool in the Bois des Issarts.

What was there to draw him and retain him in such places, so unpropitious for the holiday of a professor on vacation? Ah! they are the favourite resort of the Bembex, one of his favourite insects. "A blazing sun, a sky magnificently blue, sandy slopes

to dig in, game in abundance to feed the larvæ, a peaceful spot hardly ever disturbed by a passing step": all things combined to attract the digger-wasp to such localities.

I was, however, not the only one to profit by the shade of my umbrella; I was generally surrounded by numerous companions. Gad-flies of various species would take refuge under the silken dome, and sit peacefully on every part of the tightly-stretched cover. I was rarely without their society when the heat became overpowering. To while away the hours when I had nothing to do, it amused me to watch their great gold eyes, which shone like carbuncles under my canopy; I loved to follow their solemn progress when some part of the ceiling became too hot and obliged them to move a little way on.

One day, bang! The tight cover resounded like the skin of a drum. Perhaps an oak had dropped an acorn on the umbrella. Presently, one after the other, bang, bang, bang! Can some practical joker have come to disturb my solitude and fling acorns or little pebbles at my umbrella? I leave my tent and inspect the neighbourhood: nothing! The same sharp sound is repeated. I look up at the ceiling, and the mystery is explained. The Bembex of the vicinity, who all consume Gad-flies, had discovered the rich provender that was keeping me company, and were impudently penetrating my shelter to seize the flies on the ceiling.

Things were going to perfection; I had only to sit still and look.

Every moment a Bembex would enter, swift as lightning, and dart up to the silken ceiling, which resounded with a sharp thud. Some rumpus was going on aloft, where the eye could no longer distinguish between attacker and attacked, so lively was the fray. The struggle did not last for an appreciable time: the Wasp would retire forthwith with a victim between her legs.

Obviously this suddenness of attack, followed by the swift removal of the prey, does not allow the Bembex to regulate her dagger-play.[1]

With ever-increasing accuracy, by the combined efforts of observation and experiment, that rich entomological material was amassed which was one day to serve for the erection of one of the finest and most enduring monuments of contemporary science.

We should form but a very incomplete idea of the sort of work to which the future author of the *Souvenirs* began to devote himself at this early stage of his professorship were we merely to note his frequent visits to Les Angles and his long sessions beneath his umbrella in the Bois des Issarts.

Apart from this favourite field of observa-

[1] *Souvenirs*, I., pp. 221, 240-241. *The Hunting Wasps*, chap. xiv., "The Bembex."

tion, the enthusiastic curiosity of the naturalist found scope for its exercise on every hand.

Whether at home or abroad, whether passing along the public highway or visiting a friend, it was enough for an insect to appear to capture and retain his attention without regard for the circumstances and without a thought as to what might be said of him. On one occasion a Pelopæus, that is, a Potter-wasp (*πηλοποίος*), holding her pellet of mud in her jaws, came to his fireside one washing-day, seeking access to the nest which she was building behind the breast of the fireplace. More anxious about the Wasp than about the washing, he controlled the fire so that it should not too greatly incommode the little mason by eddies of smoke or flame, and for two good hours he followed the coming and going of the Pelopæus, and the progress of her nest-building. This was in the early days of his Avignon professorship.[1]

Another day it was once again the strange mud-worker which attracted his attention, not in his own house this time but in the kitchen of Roberty, one of the chief farmhouses on the outskirts of Avignon. Returning to dinner from their work in the fields, the farm

[1] *Souvenirs*, IV., 3-5.

hands had hung, on pegs driven into the wall, one his blouse and another his hat. While they were devoting their attention to the soup, the guest had his eyes fixed upon the Pelopæi which came prowling about the men's clothes and found them so well adapted to their needs that they began to build their nests upon them. Unfortunately for the builders and the spectator, the men soon rose from the table and shook their belongings, dislodging masses of mud already as large as an acorn. Ah! If he had been the owner of those garments, how gladly he would have allowed the Pelopæi to work their will, in order to learn the fate of a nest built upon the shifting surface of a smock-frock.[1]

The unavoidable limitations imposed by observations undertaken at home are not more disappointing to the investigator than the possible disturbance caused by passers-by should he attempt to watch the insect on the public highways. Here is an example. The professor, on one of his "days off," is qui-

[1] However, the audacious insect had other surprises in store for him: his notes speak of nests found more or less by chance near the still of a distillery, on the top of a steam-engine in a silk mill, on the walls and furniture of a farmhouse kitchen, and even in the interior of a gourd in which the farmer kept his shot on the chimney-piece; in a word, wherever there was warmth and not too much light. *Souvenirs,* IV., p. 8-12.

etly strolling along a narrow footpath on the banks of the Rhône:

A Yellow-winged Sphex appears, hopping along, dragging her prey. What do I see? The prey is not a Cricket, but a common Acridian, a Locust! And yet the Wasp is really the Sphex with whom I am so familiar, the Yellow-winged Sphex, the keen Cricket-huntress. I can hardly believe the evidence of my own eyes.

The burrow is not far off: the insect enters it and stores away the booty. I sit down, determined to wait for a new expedition, to wait hours if necessary, so that I may see if the extraordinary capture is repeated. My sitting attitude makes me take up the whole width of the path. Two raw conscripts heave in sight, their hair newly cut, wearing that inimitable automaton look which the first days of barrack-life bestow. They are chatting together, talking no doubt of home and the girl they left behind them; and each is innocently whittling a willow-switch with his knife. I am seized with a sudden apprehension. I therefore got up without speaking and trusted to my lucky star. Alas and alack, my star betrayed me: the heavy regulation boot came straight down upon the ceiling of the Sphex! A shudder ran through me as though I myself had received the impress of the hobnailed sole.[1]

[1] *Souvenirs*, I., p. 122. *The Hunting Wasps*, chap. vii., "Advanced Theories."

And the unfortunate observer cries, with an emotion which he does not attempt to conceal:

Alas! It is no easy matter to experiment on the public road, where, when the long-waited event occurs at last, the arrival of a wayfarer is likely to disturb or ruin opportunities that may never return!

But the entomological hero does not allow himself to be discouraged by those unfortunate encounters with the profane, nor does he shrink from the humiliation which they sometimes inflict upon him. The following is a characteristic example:

Ever since daybreak I have been ambushed, sitting on a stone, at the bottom of a ravine. The subject of my matutinal visit is the Languedocian Sphex. Three women, vine-pickers, pass in a group, on the way to their work. They give a glance at the man seated, apparently absorbed in reflection. At sunset the same pickers pass again, carrying their full baskets on their heads. The man is still there, sitting on the same stone, with his eyes fixed on the same place. My motionless attitude, my long persistency in remaining at that deserted spot, must have impressed them deeply. As they passed by me, I saw one of them tap her forehead and heard her whisper to the others:

"Un paouré inoucént, pécaïre!"
And all three made the sign of the Cross.[1]

This last scene was enacted on one of the deeply-sunken roads on the outskirts of Carpentras, whither Fabre was fond of repairing for his researches. From an early period, indeed, his craze for exploration had led him far beyond the Avignon district. On this third stage of his excursions, he struck out to some extent in all directions, but the locality which he preferred for his insect-hunting was undoubtedly the "Sunken Road," as it was called, in the neighbourhood of Carpentras. A lonely valley with a sandy soil, with high, steep slopes on either hand, its flanks deeply scored into ravines and burned by the sun, the "Sunken Road" was an ideal home for the Hymenoptera, those lovers of sunny slopes and soils that are easily worked; and this was enough to make it the favourite haunt of the intrepid biologist.[2]

Among the Hymenoptera that frequent the slopes and embankments of the "Sunken Road," in addition to the Hunting-wasps, which feed their larvæ on living flesh, there are other species which provide them with

[1] *Souvenirs*, I., p. 136. *The Hunting Wasps*, chap. viii., "The Languedocian Sphex."
[2] *Souvenirs*, I., pp. 50, 52; II., p. 262 *et seq.*

honey. These also attracted the naturalist's attention; these also provided a protracted test for his ingenuity and patience, and finally rewarded his pains beyond all hopes.

The following is an interesting description of the naturalist's encounter with a swarm of Bees in the "Sunken Road" while endeavouring to observe the installation of the Sitares in the cell of the Anthophora:

In front of a high expanse of earth a swarm stimulated by the sun, which floods it with light and heat, is dancing a crazy ballet. It is a hover of Anthophoræ, a few feet thick and covering an area which matches the sort of house-front formed by the perpendicular soil. From the tumultuous heart of the cloud rises a monotonous, threatening murmur, while the bewildered eye strays through the inextricable evolutions of the eager throng. With the rapidity of a lightning-flash, thousands of Anthophoræ are incessantly flying off and scattering over the country-side in search of booty; thousands of others also are incessantly arriving, laden with honey or mortar, and keeping up the formidable proportions of the swarm.

I was at that time something of a novice as regards the nature of these insects.

"Woe," said I to myself, "woe to the reckless wight bold enough to enter the heart of this swarm and, above all, to lay a rash hand upon the dwellings under construction! Forthwith surrounded

by the furious host, he would expiate his rash attempt, stabbed by a thousand stings!"

At this thought, rendered still more alarming by the recollection of certain misadventures of which I had been the victim when seeking to observe too closely the combs of the Hornet (*Vespa crabro*), I felt a shiver of apprehension pass through my body.

Yet, to obtain light upon the question which brings me hither, I must needs penetrate the fearsome swarm; I must stand for whole hours, perhaps all day, watching the works which I intend to upset; lens in hand, I must scrutinise, unmoved amid the whirl, the things that are happening in the cells. The use moreover of a mask, of gloves, of a covering of any kind, is impracticable, for extreme dexterity of the fingers and complete liberty of sight are essential to the investigations which I have to make. No matter: even though I leave this wasps'-nest with a face swollen beyond recognition, I must to-day obtain a decisive solution of the problem which has preoccupied me too long.

My preparations are made at once: I button my clothes tightly, so as to afford the Bees the least possible opportunity, and I enter the heart of the swarm. A few blows of the mattock, which arouse a far from reassuring crescendo in the humming of the Anthophoræ, soon place me in possession of a lump of earth; and I beat a hasty retreat, greatly astonished to find myself still safe and sound and unpursued. But the lump of earth which I have removed is from a part too near the surface; it

contains nothing but Osmia-cells, which do not interest me for the moment. A second expedition is made, lasting longer than the first; and, though my retreat is effected without great precipitation, not an Anthophora has touched me with her sting, nor even shown herself disposed to fall upon the aggressor.

This success emboldens me. I remain permanently in front of the work in progress, continually removing lumps of earth filled with cells, spilling the liquid honey on the ground, eviscerating larvæ and crushing the Bees busily occupied in their nests. All this devastation results merely in arousing a louder hum in the swarm and is not followed by any hostile demonstration.

Thanks to this unexpected lack of spirit in the Mason-bee, I was able for hours to pursue my investigations at my leisure, seated on a stone in the midst of the murmuring and distracted swarm, without receiving a single sting, although I took no precautions whatever. Country-folk, happening to pass and beholding me seated, unperturbed in the midst of the whirl of Bees, stopped aghast to ask me whether I had bewitched them, whether I charmed them, since I appeared to have nothing to fear from them:

"Mé, moun bel ami, li-z-avé doun escounjurado què vous pougnioun pas, canèu de sort!"

My miscellaneous impediments spread over the ground, boxes, glass jars and tubes, tweezers and magnifying-glasses, were certainly regarded by these good people as the implements of my wizardry.

I can assert to-day, after a long experience, that only the Social Hymenoptera, the Hive-bees, the Common Wasps, and the Bumble-bees know how to devise a common defence; and only they dare fall singly upon the aggressor, to wreak an individual vengeance.

But we would not leave the banks of the "Sunken Road," which have been made classic by Fabre's observations on the Cerceris, the Sitaris and *tutti quanti*, without letting the reader hear an echo of the heartfelt accents in which the now ageing scientist speaks of these spots which witnessed his first endeavours and his first achievements as an entomologist, when he returns to them thirty years later to complete his data respecting the Anthophora's parasites:

Illustrious ravines whose banks are calcined by the sun, if I have in some small degree contributed to your fame, you, in your turn, have afforded me some happy hours of oblivion spent in the joy of learning. You, at least, have never lured me with vain hopes; all that you have promised me you have given me, often a hundredfold. You are my promised land, in which I fain would finally have pitched my observer's tent. It has not been possible to realise my desire. Let me at least salute in passing my beloved insects of other days.

A wave of the hat to the Tuberculated Cerceris,

which I see on yonder bank busied with warehousing her Cleonus. As I saw her long ago, so I see her to-day . . . Watching her at work, a younger blood flows in my veins; I scent, as it were, the fragrance of some renewal of life. But time passes; let us pass on.

Yet another greeting here. I hear rustling overhead, above that ledge, a community of Sphex-wasps, stabbing their Crickets! Let us give them a friendly glance, but no more. My acquaintances here are too numerous: I have not time to resume all my old relations.

Without stopping, a wave of the hat to the Eumenes . . . the Philanthus . . . the Tachytes . . .

At last we are there![1]

This last exclamation, a cry from the heart, which reveals the object of this latest visit, is addressed to the murmuring city of the Anthophoræ, in which he had formerly made such valuable discoveries, and in which there was still something left to discover: so true is it that even in those regions which have been most fully explored the scientist worthy of the name never flatters himself that he has reached the final limits of knowledge.

[1] *Souvenirs*, II., pp. 262-303, III., 194-195. *The Glow-Worm*, chap, ii., "The Sitaris;" *The Life of the Fly*, chap. iv., "Larval Dimorphism."

CHAPTER XI

THE PROFESSOR: AVIGNON (CONTINUED)

IN sketching for the reader's benefit, the characteristic features of the Avignon naturalist, always busy with his researches, and always on the alert for fresh discoveries, we venture to flatter ourselves that we have placed before him one of the most accomplished and attractive types of that harmonious synthesis of industry and genius, which alone is capable of engendering great achievements, and which was so ably defined by the Latin poet in the words:

" . . . Ego nec studium sine divite venâ,
Nec rude quid possit video ingenium. Alterius sic
Altera poscit opem res et conjurat amice." [1]

It will be no less interesting to see by what varied and concurrent circumstances, by what personal interventions, a virtuosity and an activity so well co-ordinated were stimulated, directed and controlled, sustained and pro-

[1] HORACE, *Ars Poetica*, 409 *et seq.*

tected against all causes of deviation or discouragement.

Not in vain does a man breathe at birth the air of the mountain-tops; not in vain does he live his earliest summers with the vision of the heights before him. He retains as it were a nostalgia for the heights, and a wild longing to climb them. It will not surprise us to learn that the child of the Haut-Rouergue, transplanted, by the vicissitudes of life, from the Lévézou mountains to the Provençal plains, should calm his brain, burning with the stress of study, by gazing at Mont Ventoux, and anticipating his approaching expedition to the mountain of his dreams.[1] We shall not be surprised to find that he never allowed himself to be repulsed by the difficulties of the enterprise, and that more than a score of ascents failed to produce satiety, whereas many another found his courage and his interest evaporate almost at the outset.[2] For the ascent of Mont Ventoux is a difficult task, more difficult than that of the majority of our mountains:

One might best compare the Ventoux with a heap of stones broken up for road-mending pur-

[1] *Souvenirs,* III., p. 193.
[2] *Ibid.,* I., p. 182. *The Hunting Wasps,* chap. xi., "An Ascent of Mont Ventoux."

poses. Raise this heap suddenly to a height of a mile and a quarter, increase its base in proportion, cover the white of the limestone with the black stain of the forests, and you have a clear idea of the general aspect of the mountain. This accumulation of rubbish—sometimes small chips, sometimes huge blocks—rises from the plain without preliminary slopes or successive terraces that would render the ascent less arduous by dividing it into stages. The climb begins at once by rocky paths, the best of which is worse than the surface of a road newly strewn with stones, and continues, becoming ever rougher and rougher, right to the summit, the height of which is 6270 feet. Green swards, babbling brooks, the spacious shade of venerable trees, all the things, in short, that lend such charm to other mountains, are here unknown and are replaced by an interminable bed of limestone broken into scales, which slip under our feet with a sharp, almost metallic "click." By way of cascades the Ventoux has rills of stones; the rattle of falling rocks takes the place of the whispering waters.[1]

But the unsatisfied eagerness that draws the exile from our cool green hills to repeat, again and again, the ascent of the rocky Provençal height, is based on something more than sensitiveness to impressions and a preestablished harmony; he is also strongly at-

[1] *Souvenirs*, I., pp. 182-3. *The Hunting Wasps*, chap. xi., "An Ascent of Mont Ventoux."

tracted by the peculiar and unique variety of the flora growing upon its slopes:

Thanks to its isolated position, which leaves it freely exposed on every side to atmospheric influences; thanks also to its height, which makes it the topmost point of France within the frontiers of either the Alps or the Pyrenees, our bare Provençal mountain, Mont Ventoux, lends itself remarkably well to the study of the climatic distribution of plants. At its base the tender olive thrives, with all that multitude of semi-ligneous plants, such as the thyme, whose aromatic fragrance calls for the sun of the Mediterranean regions; on the summit, mantled with snow for at least half the year, the ground is covered with a northern flora, borrowed to some extent from Arctic shores. Half a day's journey in an upward direction brings before our eyes a succession of the chief vegetable types which we should find in the course of a long voyage from south to north along the same meridian.[1]

To any one with any love of plants, to any one with blood in his veins, the expedition was a tempting one. So we see him set out for the twenty-third time in company with two colleagues [2] and five others. Let us join them if we wish to make the acquaintance of the

[1] *Souvenirs*, I., p. 180.

[2] Th. Delacour and Bernard Valot of the Jardin des Plantes.

botanist of Mont Ventoux as well as the botany; for Fabre is one who throws himself wholly into all that he does, and his history can no more be divorced from that of his plants than from that of his beloved insects.

It is four o'clock in the morning. At the head of the caravan walks Triboulet, with his Mule and his Ass: Triboulet, the Nestor of the Ventoux guides. My botanical colleagues inspect the vegetation on either side of the road by the cold light of the dawn; the others talk. I follow the party with a barometer slung from my shoulder and a note-book and pencil in my hand.

My barometer, intended for taking the altitude of the principal botanical halts, soon becomes a pretext for attacks on the gourd with the rum. No sooner is a noteworthy plant observed than somebody cries:

"Quick, let's look at the barometer!"

And we all crowd around the gourd, the scientific instrument coming later. The coolness of the morning and our walk make us appreciate these references to the barometer so thoroughly that the level of the stimulant falls even more swiftly than that of the mercury. In the interests of the immediate future I must consult Torricelli's tube a little less often.

As the temperature grows too cold for them, first the oak and the ilex disappear by degrees; then the vine and the almond-tree; and next the mul-

berry, the walnut-tree, and the white oak. Box becomes plentiful. We enter upon a monotonous region extending from the end of the cultivated fields to the lower boundary of the beech-woods, where the predominant plant is *Satureia montana,* the winter savory, known here by its popular name of *pébré d'asé,* Ass's pepper, because of the acrid flavour of its tiny leaves, impregnated with essential oil. Certain small cheeses forming part of our stores are powdered with this strong spice. Already more than one of us is biting into them in imagination and casting hungry glances at the provision bags carried by the Mule. Our hard morning exercise has brought appetite, and more than appetite, a devouring hunger, what Horace calls *latrans stomachus.* I teach my colleagues how to stay this rumbling stomach until they reach the next halt; I show them a little sorrel-plant, with arrow-head leaves, the *Rumex scutatus,* or French sorrel; and, practising what I preach, I pick a mouthful. At first they laugh at my suggestion. I let them laugh and soon see them all occupied, each more eagerly than his fellow, in plucking the precious sorrel.

While chewing the acid leaves we come to the beeches. These are first big, solitary bushes, trailing on the ground; soon after, dwarf trees, clustering close together; and, finally, mighty trunks, forming a dense and gloomy forest, whose soil is a mass of rough limestone blocks. Bowed down in winter by the weight of the snow, battered all the year round by the fierce gusts of the Mistral, many of

the trees have lost their branches and are twisted into grotesque postures, or even lie flat on the ground. An hour or more is spent in crossing this wooded zone, which from a distance shows against the sides of the Ventoux like a black belt. Then once more the beeches become bushy and scattered. We have reached their upper boundary and, to the great relief of all of us, despite the sorrel-leaves, we have also reached the stopping-place selected for our lunch.

We are at the source of the Grave, a slender stream of water caught, as it bubbles from the ground, in a series of long beech-trunk troughs, where the mountain shepherds come to water their flocks. The temperature of the spring is 45° F.; and its coolness is a priceless boon for us who have come from the sultry oven of the plain. The cloth is spread on a charming carpet of Alpine plants, with glittering among them the thyme-leaved paronychia, whose wide, thin bracts look like silver scales. The food is taken out of the bags, the bottles extracted from their bed of hay. On this side are the joints, the legs of mutton stuffed with garlic, the stacks of loaves; on that, the tasteless chickens, for our grinders to toy with presently, when the edge has been taken off our appetite. At no great distance, set in a place of honour, are the Ventoux cheeses spiced with winter savory, the little *pébré d'asé* cheeses, flanked by Arles sausages, whose pink flesh is mottled with cubes of bacon and whole peppercorns. Over here, in this corner, are green olives still dripping with brine and black

olives soaking in oil; in that other, Cavaillon melons, some white, some orange, to suit every taste; and, down there, a jar of anchovies which make you drink hard and so keep your strength up. Lastly, the bottles are cooling in the ice-cold water of the trough over there. Have we forgotten anything? Yes, we have not mentioned the crowning side-dish, the onions, to be eaten raw with salt. Our two Parisians—for we have two among us, my fellow-botanists—are at first a little startled by this very invigorating bill of fare; soon they will be the first to burst into praises.[1]

But we will pass over the remarks made at breakfast and the incidents of the last stage of the climb; we will make direct for the summit of Mont Ventoux, where the leader of the expedition will give us a glimpse of the delights that await the naturalist at the end of his climb when he has taken the precaution to make it at the right moment:

Would you do some really fruitful botanising? Be there in the first fortnight of July; above all, be ahead of the grazing herds: where the sheep has browsed you will gather none but wretched leavings. While still spared by the hungry flocks, the top of the Ventoux in July is a literal bed of flowers; its loose stony surface is studded with

[1] *Souvenirs*, I., pp. 181-186. *The Hunting Wasps*, chap. xi., "An Ascent of Mont Ventoux."

them. My memory recalls, all streaming with the morning dew, those elegant tufts of *Androsace villosa,* with its pink-centred white blooms; the Mont-Cenis violet, spreading its great blue blossoms over the chips of limestone; the spikenard valerian, which blends the sweet perfume of its flowers with the offensive odour of its roots; the wedge-leaved globularia, forming close carpets of bright green dotted with blue capitula; the Alpine forget-me-not, whose blue rivals that of the skies; the Candolla candy-tuft, whose tiny stalk bears a dense head of little white flowers and goes winding among the loose stones.[1]

Our naturalist is evidently fascinated by so many beauties, of such delicate quality. Will he not be tempted to forsake his insects for the flowers? Will not the botanical wealth of the Ventoux make him forget the entomological wonders of the "Sunken Road"? No; he is saved from such an error by God and the good genius that watches over the destiny of him who is to become the prince of entomologists. Even in his lectures on botanical subjects the insects are given their due; and now from time to time they claim his attention and seduce him from the spectacle of the vegetable curiosities which form the principal motive of

[1] *Souvenirs,* I., pp. 192-193.

the expedition; it is now the Ammophila and now the Decticus [1] that crosses the path of the naturalist in search of plants and flowers, recalling, by some of the most curious problems of entomology, the first beginnings of his vocation and the great task of his life.

But the silent language of the tiny creatures destined to be his most intimate companions through life was seconded, at an opportune moment, by the more expressive language of human speech. Here we have one of those events that were landmarks in Fabre's life, marking the starting-point of a fresh phase in the evolution of his ideas and his labours. He alone can describe for us the actual nature and exact significance of this incident:

One winter evening, when the rest of the household was asleep, as I sat reading beside a stove whose ashes were still warm, my book made me forget for a while the cares of the morrow: these heavy cares of a poor professor of physics who, after piling up diplomas and for a quarter of a century performing services of uncontested merit, was receiving for himself and his family a stipend of sixteen hundred francs, or less than the wages of a groom in a decent establishment. Such was the

[1] *Souvenirs*, VI., p. 166; I., p. 187.

disgraceful parsimony of the day where education was concerned; such was the edict of our government red-tape: I was an irregular, the offspring of my solitary studies. And so I was forgetting the poverty and anxieties of a professor's life amid my books, when I chanced to turn over the pages of an entomological essay that had fallen into my hands I forget how.

It was a monograph by the then father of entomology, the venerable scientist Léon Dufour, on the habits of a Wasp that hunted Buprestis beetles. Certainly, I had not waited till then to interest myself in insects; from my early childhood I had delighted in Beetles, Bees, and Butterflies; as far back as I can remember, I see myself in ecstasy before the splendour of a Ground-beetle's wing-cases or the wings of *Papilio machaon,* the Swallowtail. The fire was laid; the spark to kindle it was absent. Léon Dufour's essay provided that spark.[1]

New lights burst forth: I received a sort of mental revelation. So there was more in science than the arranging of pretty Beetles in a cork box and giving them names and classifying them; there was something much finer: a close and loving study of insect life, the examination of the structure and especially the faculties of each species. I read of a magnificent instance of this, glowing with excitement as I did so. Some time after, aided by

[1] Léon Dufour (1780-1865) was an Army surgeon who in 1823 went through the Spanish campaign, and on returning to France settled in his native town, Saint-Sever, where he devoted himself chiefly to entomology.

those lucky circumstances which he who seeks them eagerly is always able to find, I myself published an entomological article, a supplement to Léon Dufour's. This first work of mine won honourable mention from the Institute of France, and was awarded a prize for experimental physiology. But soon I received a far more welcome recompense, in the shape of a most eulogistic and encouraging letter from the very man who had inspired me. From his home in the Landes the revered master sent me a warm expression of his enthusiasm and urged me to go on with my studies. Even now, at that sacred recollection, my old eyes fill with happy tears. O fair days of illusion, of faith in the future, where are you now?[1]

Moquin-Tandon converted Fabre to the study of animals and plants. Dufour converted him to the study of insects, and taught him to publish the results of his entomological studies.

Dufour's little work was a revelation; a flash of light revealing his vocation. It was like the electric impulse that bursts the seed about to open, that sends the genius ready to unfold its wings soaring into the heavens.

It was to the chance perusal of a certain passage that another prince of science owed

[1] *Souvenirs*, I., pp. 39-41. *The Hunting Wasps*, chap. i., "The Buprestis-hunting Cerceris."

the awakening of his genius. We are speaking of Pasteur, whom we shall presently see in his dealings with Fabre. "It was through reading a note by the Russian chemist, Mitscherlich, on the comparison of the specific characters of certain crystals that Pasteur became interested in those investigations of the subject of molecular dissymmetry which were the starting-point of so many wonderful discoveries." [1]

Does it not seem that there must be a special Providence for the elect of science?

In Dufour's memoir, which gave Fabre so decisive an impulsion toward entomology, a singular fact is mentioned: the naturalist of the Landes found in the nest of a species of Wasp known as the Cerceris some small beetles of the Buprestis family, which, although apparently dead, remained as fresh as though alive during the period occupied by the rearing of the larvæ for whose nourishment they are destined to serve.

Dufour supposed that these Buprestes were simply dead, and, "in order to explain this marvellous preservation of their flesh, which makes an insect that for several weeks has been motionless as a corpse a kind of game that does not become high but remain

[1] *Fabre, Poet of Science*, p. 58.

as fresh as at the moment of capture during the greatest heat of summer, he presumed the use of a liquid antiseptic, acting in the same manner as the preparations used to preserve anatomical specimens. This liquid could only be the venom of the Hymenopteron inoculated into the victim's body. The tiny drop of poisonous humour that accompanies the sting, the lancet employed in the inoculation, is supposed to perform the office of a kind of pickle or preservative liquid for preserving the flesh set aside for the nourishment of the larvæ.

But Fabre was burning with curiosity to observe for himself a phenomenon which an old practitioner like Dufour proclaims the most curious and extraordinary known to the history of the insect kingdom.[1] He did not hesitate to go to Carpentras, to search for the Buprestis-hunting wasp, which does not occur in the neighbourhood of Avignon. A minute inspection of the Cerceris' victims enabled him to prove that, not only was the flesh intact, but the joints were flexible, the viscera were moist, defalcation persisted, and vestiges of irritability even were present, all of which facts were scarcely compatible

[1] *Souvenirs,* I., pp. 41, 44. *The Hunting Wasps,* chap. I., "The Buprestis-hunting Cerceris."

" with the supposition of an animal absolutely dead, the hypothesis of a true corpse rendered incorruptible by the effect of a liquid preservative." He was thus led to conclude that the insect was not dead, but only benumbed and reduced to a state of immobility.

Fascinated and intrigued by Dufour's discovery, Fabre wished to see the process for himself, and as a result he made the first and the finest of his own entomological discoveries, which he was later on to enrich by more precise and more remarkable details.

But at the same time he was forced to realise how incomplete and superficial were the observations of the man whom he nevertheless revered as the first among his masters.

How often was he to find occasion for revising the statements of his predecessors! They were not merely incomplete; they were often erroneous, even when they had the greatest names to recommend them.

Must we then ignore all that has been said and written and wholly repudiate the inheritance of the centuries and the scientists of the past? Heaven preserve us from such stupidity! But while it would not be reasonable or even possible to make a clean sweep of all that has been acquired by our

predecessors, it is none the less prudent not to accept, in blind confidence, the whole heritage of the past, but to subject to the control of facts the statements even of the masters when these appear at all extravagant. Otherwise we run the risk, if not of perpetrating error by repeating it on our own responsibility, at all events of following a false trail on which we may lose much time and which may finally lead us to envy the lot of those who are able to attack their subject, from the very first, with minds empty of all information and any preconceived ideas. This was brought well home to Fabre by the repeated experience of errors which had escaped the most learned authors and erroneous methods suggested by the best books. And the persuasive effect of the highly symptomatic example afforded by an absolutely unrivalled master was even more eloquent.

Unexpectedly, one fine day [writes Fabre], Pasteur rang my door-bell: the Pasteur who was presently to acquire so great a celebrity. His name was known to me. I had read his beautiful essay on the dissymmetry of tartaric acid; I had followed with the keenest interest his researches concerning the generation of the Infusoria.

Every period has its scientific craze; to-day it is evolution; then it was spontaneous generation. By

his glass bulbs, made sterile or fertile at will, by his experiments, magnificent in their rigorous simplicity, Pasteur exploded for ever the insanity which professed to see life arising from a chemical conflict in a mass of putrescence.

Aware of this dispute, so victoriously elucidated, I gave my illustrious visitor the best of welcomes. The scientist had come to me in the first place for certain information. I owed this notable honour to my quality of colleague as a teacher of physics and chemistry. Ah, but what a humble, obscure colleague!

Pasteur's tour through the district of Avignon was in connection with sericulture. For some years the silk-worm nurseries had been at sixes and sevens, ravaged by unknown plagues. The silk-worms, without appreciable cause, became masses of putrid deliquescence, or hardened into stony lumps. The peasant, in dismay, saw one of his chief sources of income disappearing; after much expense and trouble he had to throw his litters on the dung-heap.

A few words were exchanged concerning the prevailing evil; then, without further preamble:

"I wanted to see some cocoons," said my visitor; "I have never seen any; I know them only by name. Could you get me some?"

"Nothing simpler. My landlord is himself a dealer in cocoons, and he lives across the road. If you'll be good enough to wait a moment, I will bring you what you want."

A few long strides and I had reached my neighbour's house, where I stuffed my pockets with cocoons. On my return I offered them to the scientist. He took one, turned it over and over in his fingers; curiously he examined it, as we should some singular object which had come from the other end of the world. He shook it against his ear.

"It rattles!" he said, quite surprised. "There is something inside!"

"Why, yes!"

"But what?"

"The chrysalis."

"What's that, the chrysalis?"

"I mean the sort of mummy into which the caterpillar turns before it becomes a moth."

"And in every cocoon there is one of those things?"

"Of course; it's to protect the chrysalis that the caterpillar spins."

"Ah!"

And without more ado, the cocoons went into the pocket of the scientist, who was to inform himself at leisure concerning this great novelty, the chrysalis. This magnificent assurance impressed me. Knowing nothing of caterpillar, cocoon, chrysalis, or metamorphosis, Pasteur had come to regenerate the silkworm. The ancient gymnasts presented themselves naked for the contest. This ingenious thinker, who was to fight the plague of the silk-worm nurseries, had also hastened to battle wholly naked: that is, devoid of the simplest

notions of the insect he was to save from danger. I was astounded; more, I was filled with wonder.[1]

The fact is indeed so extraordinary that it may well appear incredible, but it receives authentic confirmation from the wholly concordant account of Duclaux, Pasteur's pupil and historiographer, as well as from the honesty of the naturalist, who is assuredly incapable of having invented the story for our amusement.

I still remember the day [says Duclaux] when Pasteur, returning to the laboratory, said to me with a touch of excitement in his voice:

"Do you know what M. Dumas has just asked of me? To go to the Midi, to study the silk-worm disease."

I don't know what I replied; probably what he himself replied to his illustrious master: Then there is a silk-worm disease? There are provinces that are being ruined by it? All this was happening so far from Paris, and we were so far from Paris in the laboratory! . . .

Pasteur hesitated. He was not a physiologist. But Dumas' insistence, the attraction of the unknown, and an inward voice urged him to accept. So he left for the Midi; it was early in June 1865. He was invested with an official mission which confronted him with a plague that had to be conquered

[1] *Souvenirs*, IX., pp. 326-328.

and obliged him to render an account of the attempts made and the results obtained.

To be sent to fight a fire and not to know what fire is and to have no fire-engine or hose! It needed Pasteur to accept and to shoulder such a responsibility! . . . To his complaint that he had no knowledge of the matter, Dumas had replied:

"So much the better! You will have no ideas on the subject but those that will come to you as a result of your own observations!"

This reply is not always a paradox, but one has to be careful to whom one makes it![1]

In this case the choice was not mistaken, and the lesson was as profitable to Pasteur as it was to Fabre, to whom he was about to hand it on, all unsuspecting.

When Pasteur was called upon to regenerate seri-culture, the silk-worm disease had been known for twenty years. During that period much research had been undertaken and many efforts had been made, in France as well as in Italy, to discover the nature of the affection and to fight it. But "of all this story, a mixture of truth and falsehood, Pasteur knew nothing when he began his researches." More—and this was what astonished Fabre—he knew nothing of the physiology or the rearing of the silk-worm. "For

[1] Duclaux, *Pasteur, Histoire d'un Esprit,* pp. 182-93.

the first time he has seen a cocoon, and has learned that there is something in the cocoon, a rough model of the future moth," . . . and he is about to revolutionise the hygiene of the silk-worm nurseries and is preparing to revolutionise medicine and general hygiene in the same way,[1] by showing that the maladies of silk-worms and most of our human maladies arise from the development in the tissues of a microscopic living entity, a microbe, the cause of the malady. And while his other discoveries won for him only fame and the admiration of his contemporaries, this will give him immortality and place him in the front rank of the benefactors of humanity. Decidedly ignorance may have its advantages.

Encouraged by the magnificent example of Pasteur (continues the entomologist), I have made it a rule to adopt the method of ignorance in my investigations of the instincts. I read very little. Instead of turning over the leaves of books, an expensive method which is not within my means, instead of consulting others, I set myself obstinately face to face with my subject until I contrive to make it speak. I know nothing. So much the better; my interrogation will be all the freer, to-day tending in one direction, to-morrow in another, according to the information acquired. And

[1] *Souvenirs*, IX., p. 330.

if by chance I do open a book, I am careful to leave a section of my mind wide open to doubt.[1]

Beginning with that arising out of Dufour's memoir, repeated experiences taught Fabre not to be too greatly influenced, in his conceptions of natural objects, by faith in his reading or even in the assertions of his masters. To go still further, Pasteur's example made him appreciate the advantage of coming fresh to the facts, of confronting them in a state of ignorance, of receiving impressions from them alone, and of having no ideas but those that truly emanate from the reality.

Without going to extremes, Fabre benefited by this twofold lesson. No one had a greater respect for his masters; he quotes them readily and is chary neither of praising their works nor of expressing his gratitude to them;[2] but no one was ever more independent in his researches and his conclusions, which are often the very contrary of theirs. If he revered his masters he revered the truth still more, and he might well have made his own the celebrated maxim: *Amicus Plato, magis amica veritas.*

[1] *Souvenirs,* IX., pp. 330-331.

[2] *Souvenirs,* I., p. 40, 73; II., pp. 78, 83, 181, 214, 234, 235, 283; V., pp. 76, 188, 229, etc.

Let us add that while no one was ever more interested in authors and their writings, to purchase which he often sacrificed his last coppers, and even his daily bread, no one was more resolutely determined to give the first place to the language of facts, and direct intercourse with the tiny living creatures whom he had chosen for his own. So much so that, if we wish fully to describe his method, we must complete the maxim which we have just quoted by this other, which forms its exact counterpart: *Amicus liber, magis amica natura.*

CHAPTER XII

THE PROFESSOR: AVIGNON (CONTINUED)

WHEN Pasteur called upon Fabre, at the beginning of his investigation of the silk-growing industry, he was also greatly interested in the improvement of wines by the application of heat.[1] Thus it was that,

[1] Everybody knows to-day that heat kills, or so far enfeebles as to render inoffensive, the microbes that infact liquids and make it impossible to preserve them.

This again is one of Pasteur's happy discoveries, as is conveyed by the very verb *to pasteurise,* which means "to protect against microbes by the action of heat." We pasteurise milk, beer, wine, etc.

The ancients used to practise the heating of wines. In the house of St. John and St. Paul, discovered in Rome in 1887, beneath the church dedicated to the two martyrs, who were both officers of the Emperor Constantine, the excavators found beside the cellar and the amphoræ of wine, the little room with a fireplace known as the *furnarium,* which was used for heating wine and drying fruit.

The heating of wines was practised also at Mèze, near Cette, before Pasteur's discovery.

But the ancient method of heating had nothing in common with pasteurisation. The merchants of Hérault, like the ancients, used to heat wine in order to modify its flavour, to mature it more quickly. Pasteur, on the other hand, heats it to keep it unchanged. To mature wine it is heated slowly in contact with the air. To preserve it, the wine must be rapidly heated to 122° F. in a vacuum. The object and the method are altogether different.

having obtained the needed information respecting the silk-worm from the Avignon naturalist, he suddenly asked him to show him his cellar. Fabre found the request extremely embarrassing:

To show him my cellar! My private cellar! And I, poor wretch, but a while ago, with my preposterous professor's salary, could not even permit myself the expense of a drop of wine, so that I used to make myself a sort of rough cider, by placing a jar, to ferment, a handful of brown sugar and some grated apples! My cellar! Show him my cellar! Why not my tuns of wine, my dusty bottles, labelled according to age and vintage! My cellar!

Completely confused, I tried to evade his request, to change the subject. But he was tenacious.

"Show me your cellar, I beg you."

There was no possibility of resisting such insistence.

With my finger I pointed to a corner of the kitchen where there was a chair without a seat, and on the chair a demijohn holding a couple of gallons.

"There's my cellar, monsieur!"

"Your cellar? That?"

"I have no other."

"That's all?"

"Alas, yes. That's all!"

"Ah!"

Not a word more from the scientist. Pasteur, it was easy to see, knew nothing of those highly-flavoured dishes which the common people call *la vache enragée*. If my cellar, that is the old chair and the hollow-sounding demijohn, had nothing to tell concerning the ferments to be fought by means of heat, it spoke very eloquently of another subject, which my illustrious visitor did not appear to understand. One microbe evaded him, and it was one of the most terrible; the microbe of misfortune strangling good will.[1]

It is told of one of our most famous dramatists who, like Fabre, is a self-made man, having raised himself by persistent effort from the workshop to the Academy, that when he was struggling against the difficulties of the first steps upward, he had also to contend against the impassive coldness of eminent colleagues from whom he might have expected some support. "Young man," said one of these—and he was not one of the least illustrious—"young man, *la vache enragée* is excellent; to help you would be to spoil you."

No doubt the *vache enragée*, like the *method d'ignorance*, may have its virtues. The story of Fabre's career, and of Brieux',

[1] *Souvenirs*, IX., pp. 329-30.

goes to prove as much. But of this sort of discipline, like that which extols the advantages of ignorance, we may remark that one may have too much of it; that it succeeds only on condition of being applied with moderation and discretion.

A robust child of the Rouergat peasantry, such as Fabre, is capable of enduring an abnormal dose with unusual results. But under too great strain steel of the toughest temper is in danger of being broken or fatigued. In hours of difficulty and suffering, if they are unduly prolonged, the most resolute and courageous feel the need of an encouraging voice, and a hand outstretched to give the moral or even the material help with which one cannot always dispense with impunity.

This friendly voice, this helping hand, which Fabre failed to find in the great benefactor of humanity who witnessed his distress —so true is it that the best of us have their defects and their seasons of inattention—he was presently to find unexpectedly enough, in one of his official chiefs, whose first appearance in his life was to him like a warm "ray of sunlight" piercing the icy atmosphere of winter.

The incident is worth recording: it is all

the more delightful in that Fabre, instead of thrusting himself forward, sought rather to draw back, seeming more anxious to avoid than to recommend himself for administrative favours.

The chief inspectors visited our grammar-school. These personages travel in pairs: one attends to literature, the other to science. When the inspection was over and the books checked, the staff was summoned to the principal's drawing-room, to receive the parting admonitions of the two luminaries. The man of science began. I should be sadly put to it to remember what he said. It was cold professional prose, made up of soulless words which the hearer forgot once the speaker's back was turned, words merely boring to both. I had heard enough of these chilly sermons in my time; one more of them could not hope to make an impression on me.

The inspector in literature spoke next. At the first words which he uttered, I said to myself:

"Oho! This is a very different business!"

The speech was alive and vigorous and imageful; indifferent to scholastic commonplaces, the ideas soared, hovering gently in the serene heights of a kindly philosophy. This time, I listened with pleasure; I even felt stirred. Here was no official homily: it was full of impassioned zeal, of words that carried you with them, uttered by an honest man accomplished in the art of speaking, an orator

in the true sense of the word. In all my school experience, I had never had such a treat.

When the meeting broke up my heart beat faster than usual:

"What a pity," I thought, "that my side, the science side, cannot bring me into contact, some day, with that inspector! It seems to me that we should become great friends."

I inquired his name of my colleagues, who were always better-informed than I. They told me it was Victor Duruy.

Well, one day, two years later, as I was looking after my Saint-Martial laboratory in the midst of the steam from my vats, with my hands the colour of boiled lobster-claws from constant dipping in the indelible red of my dyes, there walked in, unexpectedly, a person whose features straightway seemed familiar. I was right; it was the very man, the chief-inspector whose speech had once stirred me. M. Duruy was now Minister of Public Instruction. He was styled "Your Excellency"; and this style, usually an empty formula, was well-deserved in the present case, for our new minister excelled in his exalted functions. We all held him in high esteem. He was the workers' minister, the man for the humble toiler.

"I want to spend my last half-hour at Avignon with you," said my visitor with a smile. "That will be a relief from the official bowing and scraping."

Overcome by the honour paid me, I apologised for my costume—I was in my short-sleeves—and

especially for my lobster-claws, which I had tried, for a moment, to hide behind my back.

"You have nothing to apologise for. I came to see the worker. The working-man never looks better than in his overall, with the marks of his trade on him. Let us have a talk. What are you doing just now?"

I explained, in a few words, the object of my researches; I showed my product; I executed under the minister's eyes a little attempt at printing in madder-red. The success of the experiment and the simplicity of my apparatus, in which an evaporating dish, maintained at boiling-point under a glass funnel, took the place of a steam-chamber, caused him some surprise.

"I will help you," he said. "What do you want for your laboratory?"

"Why, nothing, Monsieur le Ministre, nothing! With a little application, the plant I have is ample."

"What, nothing! You are unique there! The others overwhelm me with requests; their laboratories are never well enough supplied. And you, poor as you are, refuse my offers!"

"No, there is one thing which I will accept."

"What is that?"

"The signal honour of shaking you by the hand."

"There you are, my friend, with all my heart. But that's not enough. What else do you want?"

"The Paris Jardin des Plantes is under your

control. Should a crocodile die, let them keep the hide for me. I will stuff it with straw and hang it from the ceiling. Thus adorned, my workshop will rival the wizard's den."

The minister cast his eyes round the nave and glanced up at the Gothic vault:

"Yes, it would look very well." And he gave a laugh at my sally. "I now know you as a chemist," he continued. "I knew you already as a naturalist and a writer. I have heard about your little animals. I am sorry that I shall have to leave without seeing them. They must wait for another occasion. My train will be starting presently. Walk with me to the station, will you? We shall be alone and we can chat a bit more on the way."

We strolled along, discussing entomology and madder. My shyness had disappeared. The self-sufficiency of a fool would have left me dumb; the fine frankness of a lofty mind put me at my ease. I told him of my experiments in natural history, of my plans for a professorship, of my fight with harsh fate, my hopes and fears. He encouraged me, spoke to me of a better future. We reached the station and walked up and down outside, talking away delightfully.

A poor old woman passed, all in rags, her back bent by age and years of work in the fields. She furtively put out her hand for alms. Duruy felt in his waistcoat, found a two-franc piece, and placed it in the outstretched hand; I wanted to add a couple of sous as my contribution, but my pockets were

empty, as usual. I went to the beggar-woman and whispered in her ear:

"Do you know who gave you that? It's the Emperor's minister."

The poor woman started; and her astounded eyes wandered from the open-handed swell to the piece of silver and from the piece of silver to the open-handed swell. What a surprise! What a windfall!

"*Que lou bou Diéu ié done longo vido e santa, pécaïre!*" she said in her cracked voice.

And, curtseying and nodding, she withdrew, still staring at the coin in the palm of her hand.

"What did she say?" asked Duruy.

"She wished you long life and health."

"And *pécaïre?*"

"*Pécaïre* is a poem in itself: it sums up all the gentler passions."

And I myself mentally repeated the artless vow. The man who stops so kindly when a beggar puts out her hand has something better in his soul than the mere qualities that go to make a minister.

We entered the station, still alone, as promised, and I quite without misgivings. Had I but foreseen what was going to happen, how I should have hastened to take my leave! Little by little a group formed in front of us. It was too late to fly: I had to screw up my courage. Came the general of division and his officers, came the prefect and his secretary, the mayor and his deputy, the school-inspector and the pick of the staff. The minister faced the ceremonial semicircle. I stood next to

him. A crowd at one side, we two on the other. Followed the regulation spinal contortions, the empty obeisances which my dear Duruy had come to my laboratory to forget. When bowing to St. Roch,[1] in his corner niche, the worshipper at the same time salutes the saint's humble companion. I was something like St. Roch's dog in the presence of those honours which did not concern me. I stood and looked on, with my awful red hands concealed behind my back, under the broad brim of my felt hat.

After the official compliments had been exchanged, the conversation began to languish; and the minister seized my right hand and gently drew it from the mysterious recesses of my wideawake:

"Why don't you show those gentlemen your hands?" he said. "Most people would be proud of them."

I vainly protested with a jerk of the elbow. I had to comply, and I displayed my lobster-claws.

"Workman's hands," said the prefect's secretary. "Regular workman's hands."

The general, almost scandalised at seeing me in such distinguished company, added:

"Hands of a dyer and cleaner."

"Yes, workman's hands," retorted the minister, "and I wish you many like them. Believe me, they will do much to help the chief industry of your

[1] St. Roch (1295-1327) is represented in his statues with the dog that saved his life by discovering him in the solitude where after curing the plague-stricken Italians, he hid himself lest he should communicate the pestilence to others.—A. T. DE M.

city. Skilled as they are in chemical work, they are equally capable of wielding the pen, the pencil, the scalpel, and the lens. As you here seem unaware of it, I am delighted to inform you."

This time I should have liked the ground to open and swallow me up. Fortunately the bell rang for the train to start. I said good-bye to the minister and, hurriedly taking to flight, left him laughing at the trick which he had played me.

The incident was noised about, could not help being so, for the peristyle of a railway station keeps no secrets. I then learnt to what annoyances the shadow of the great exposes us. I was looked upon as an influential person, having the favour of the gods at my entire disposal. Place-hunters and canvassers tormented me. One wanted a licence to sell tobacco and stamps, another a scholarship for his son, another an increase of his pension. I had only to ask and I should obtain, said they.

O simple people, what an illusion was yours! You could not have hit upon a worse intermediary. I figuring as a postulant! I have many faults, I admit, but that is certainly not one of them. I got rid of the importunate people as best I could, though they were utterly unable to fathom my reserve. What would they have said had they known of the minister's offers with regard to my laboratory and my jesting reply, in which I asked for a crocodile-skin to hang from my ceiling! They would have taken me for an idiot.

Six months elapsed; and I received a letter summoning me to call upon the minister at his office. I

suspected a proposal to promote me to a more important grammar-school, and wrote begging that I might be left where I was, among my vats and my insects. A second letter arrived, more pressing than the first and signed by the minister's own hand. This letter said:

"Come at once, or I shall send my gendarmes to fetch you."

There was no way out of it. Twenty-four hours later I was in M. Duruy's room. He welcomed me with exquisite cordiality, gave me his hand and, taking up a number of the *Moniteur:*

"Read that," he said. "You refused my chemical apparatus; but you won't refuse this."

I looked at the line to which his finger pointed. I read my name in the list of the Legion of Honour. Quite stupid with surprise, I stammered the first words of thanks that entered my head.

"Come here," said he, "and let me give you the accolade. I will be your sponsor. You will like the ceremony all the better if it is held in private, between you and me: I know you!"

He pinned the red ribbon to my coat, kissed me on both cheeks, made me telegraph the great event to my family. What a morning, spent with that good man!

I well know the vanity of decorative ribbonry and tinware, especially when, as too often happens, intrigue degrades the honour conferred; but, coming as it did, that bit of ribbon is precious to me. It is a relic, not an object for show. I keep it religiously in a drawer.

There was a parcel of big books on the table, a collection of the reports on the progress of science drawn up for the International Exhibition of 1867, which had just closed.

"Those books are for you," continued the minister. "Take them with you. You can look through them at your leisure: they may interest you. There is something about your insects in them. You're to have this too: it will pay for your journey. The trip which I made you take must not be at your own expense. If there is anything over, spend it on your laboratory."

And he handed me a roll of twelve hundred francs. In vain I refused, remarking that my journey was not so burdensome as all that; besides, his embrace and his bit of ribbon were of inestimable value compared with my disbursements. He insisted:

"Take it," he said, "or I shall be very angry. There's something else: you must come to the Emperor with me to-morrow, to the reception of the learned societies."

Seeing me greatly perplexed, and as though demoralised by the prospect of an imperial interview:

"Don't try to escape me," he said, "or look out for the gendarmes of my letter! You saw the fellows in the bear-skin caps on your way up. Mind you don't fall into their hands. In any case, lest you should be tempted to run away, we will go to the Tuileries together in my carriage."

Things happened as he wished. The next day, in

the minister's company, I was ushered into a little drawing-room at the Tuileries by chamberlains in knee-breeches and silver-buckled shoes. They were queer people to look at. Their uniforms and their stiff gait gave them the appearance, in my eyes, of Beetles who, by way of wingcases, wore a great, gold-laced dress-coat, with a key in the small of the back. There were already a score of persons from all parts waiting in the room. These included geographical explorers, botanists, geologists, antiquaries, archæologists, collectors of prehistoric flints, in short, the usual representatives of provincial scientific life.

The Emperor entered, very simply dressed, with no parade about him beyond a wide, red, watered-silk ribbon across his chest. No sign of majesty, an ordinary man, round and plump, with a large moustache and a pair of half-closed drowsy eyes. He moved from one to the other, talking to each of us for a moment as the minister mentioned our names and the nature of our occupations. He showed a fair amount of information as he changed his subject from the ice-floes of Spitzbergen to the dunes of Gascony, from a Carlovingian charter to the flora of the Sahara, from the progress in beet-root-growing to Cæsar's trenches before Alesia. When my turn came, he questioned me upon the hypermetamorphosis of the Meloidæ, my last essay in entomology. I answered as best I could, floundering a little in the proper mode of address, mixing up the everyday *monsieur* with *sire,* a word whose use was so utterly new to me. I passed

through the dread straits, and others succeeded me. My five minutes' conversation with an imperial majesty was, they say, a most distinguished honour. I am quite ready to believe them, but I never had a desire to repeat it.

The reception came to an end, bows were exchanged, and we were dismissed. A luncheon awaited us at the minister's house. I sat on his right, not a little embarrassed by the privilege: on his left was a physiologist of great renown. Like the others, I spoke of all manner of things, including even Avignon Bridge. Duruy's son, sitting opposite me, chaffed me pleasantly about the famous bridge on which everybody dances;[1] he smiled at my impatience to get back to the thyme-scented hills and the grey olive-yards rich in Grasshoppers.

"What!" said his father. "Won't you visit our museums, our collections? There are some very interesting things there."

"I know, Monsieur le Ministre, but I shall find better things, things more to my taste, in the incomparable museum of the fields."

"Then what do you propose to do?"

"I propose to go back to-morrow."

I did go back, I had had enough of Paris: never had I felt such tortures of loneliness as in that

[1] The old, partly-demolished bridge at Avignon which figures in the well-known French catch:

"Sur le pont d'Avignon,
Tout le monde y danse en rond."

(A. T. DE M.)

immense whirl of humanity. To get away, to get away was my one idea.[1]

In re-reading this curious and attractive episode of Fabre's career, our mind was haunted by the no less attractive memory of another illustrious son of our Aveyron, which shares his glory with Provence.[2]

Like the author of the *Souvenirs entomologiques,* the writer of the *Poésie des Bêtes* is the son of humble Aveyron peasants, who raised himself by his own efforts from the first to the second grade of school teachers, and whose genius, like that of Fabre, faithful to the environment in which he was born, confines itself, with jealous care, like that of the naturalist, to the "incomparable museum of the fields," which he describes with the same clearness of vision and the same sincerity of feeling.

Like Fabre, Fabié is a modest man, who does not readily emerge from the obscurity in which his native timidity delights. In his case again it needed the perspicacity and kindliness of Duruy, "the champion of the

[1] *Souvenirs,* x., pp. 343 *et seq.* *The Life of the Fly,* chap xx., "Industrial Chemistry."

[2] M. François Fabié, ex-professor in the *lycée* of Toulon, still lives in the neighbourhood of the city, in the Villa des Troènes.

modest and the laborious," to single him out and drag him out of his hole; just as, at the present time, a Parisian publicist, of whom his fine talents have made a conquest, has truly remarked, it needed the energetic intervention of his friends to give his poetic genius the suprême consecration reserved for the works of our most eminent writers: "Thank heaven, the author of the *Poésie des Bêtes* and *Bonne Terre* has friends who admire the poet as greatly as they esteem the man, and if M. François Fabié cannot make up his mind to emerge from the obscurity in which he has only too long, indeed always, enveloped himself, I venture to hope that they will not hesitate to take him by the shoulders and bring him out into the broad light of day, and that they will then propel him willy-nilly across the Pont des Arts at the end of which rises the dome of the illustrious Forty." [1]

One might say the same of Fabre. Some one should have taken him, too, by the shoulders and pushed him forcibly across the Pont des Arts, and should then have kept his eyes upon him until he reached his destination, lest he should turn aside and fly for the Pont d'Avignon, for we must not forget that Du-

[1] *Journal d'Aveyron,* 8 November 1908.

ruy and his gendarmes, although they were capable of making him come to Paris, were incapable of keeping him there.

Fortunately Fabre's work is not of the kind that needs, for its survival, the factitious glitter of honours. By its own merit it assures his name of an immortality greater than that of the Immortal Forty.

There were three men, at this period of Fabre's life, who contributed not a little to kindle or revive the fires of his scientific activity. Dufour's essays furnished the spark that made the inward flame burst into a magnificent blaze of light. Experience and the example of Pasteur added fuel to the fire, by teaching him to keep as far as possible in close contact with nature. Duruy's good will brought to this blaze the vivifying breath without which all ardour becomes chilled and all light extinguished.

But genius does not merely develop under the impulse of the inner life, and the influence of the external life, which in some men is more potent and more active; it is determined also by the pressure of events, of which the most painful are not always the least effectual. Who does not know that famous line of Musset's, which has almost become a proverb:

"L'homme est un apprenti, la douleur est son maître."

(Man's an apprentice, and his master, sorrow.)

Like so many others, Fabre learned this by cruel yet fortunate experience. He had to suffer poverty, lack of success, and persecution, yet these were to him so many stepping-stones by which he rose to the serene and solitary height where his genius could at last unfurl its wings in freedom and soar at will.

While Fabre had no ambition in respect of the Académie, he was ambitious where the University was concerned. Absolutely careless of titles and dignities, he was particularly eager to learn and to teach others as widely and as completely as possible. It was not enough for him to possess the knowledge requisite for a professor in a *lycée,* as it had not been enough to qualify for a primary schoolmaster. He wanted to attain that rare degree of knowledge which the higher education demands; he dreamed of occupying a chair of natural history in a faculty. Then he could free himself from the material tasks that constituted the danger as well as the merit of the secondary schoolmaster; he could devote himself at leisure to those wonderful natural sciences in which he glimpsed,

not only a vitality and inspiration that appealed to his habit of mind, but a wealth of new subjects to be treated, of rich veins to be mined.

To serve this noble ambition he needed the prestige of the degrees that would lead to the coveted chair. He won them as he had won those that gave him access to the second degree of instruction, without guide or master, by the sole effort of his mind and will.

In 1858 he easily won his degree as licentiate in the natural sciences before the Faculty of Toulouse.

It is an eloquent fact that instead of being, as it is for so many others, a goal and an end in itself, the licentiate was for Fabre but a brief parenthesis in his life of study, a stage no sooner reached than crossed on the infinite path of knowledge.

The next step was that of the doctorate. It was achieved with no less ardour and success than the previous one. This is almost all we can say of it, for the hero of this history speaks of it only incidentally, because it is connected with the story of one of his insects. But for the Languedocian Scorpion the *Souvenirs* would leave us in ignorance of his degee of Doctor of Science.

It was not long before Fabre saw that it was not enough to possess all the scientific degrees you will in order to realise the long-cherished project of teaching natural history in a Faculty.

It was an inspector-general and a mathematician of the name of Rollier who undertook to inform him of this. Here is the incident as related by Fabre himself:

My colleagues used to call him the Crocodile. Perhaps he had given them a rough time in the course of his inspections. For all his boorish ways he was an excellent man at heart. I owe him a piece of advice which greatly influenced my future studies.

That day he suddenly appeared, alone, in the schoolroom, where I was taking a class in geometrical drawing. I must explain that, at this time, to eke out my ridiculous salary, and, at all costs, to provide a living for myself and my large family, I was a mighty pluralist, both inside the college and out. At the college in particular, after two hours of physics, chemistry or natural history, came, without respite, another two hours' lesson, in which I taught the boys how to make a projection in descriptive geometry, how to draw a geodetic plane, a curve of any kind whose law of generation is known to us. This was called graphics.

The sudden irruption of the dread personage causes me no great flurry. Twelve o'clock strikes,

the pupils go out and we are left alone. I know him to be a geometrician. The transcendental curve, perfectly drawn, may work upon his gentler mood. I happen to have in my portfolio the very thing to please him. Fortune serves me well, in this special circumstance. Among my boys there is one who, though a regular dunce at everything else, is a first-rate hand with the square, the compass, and the drawing-pen: a deft-fingered numskull, in short.

With the aid of a system of tangents of which I first showed him the rule and the method of construction, my artist has obtained the ordinary cycloid, followed by the interior and the exterior epicycloid, and, lastly, the same curves both lengthened and shortened. His drawings are admirable Spiders' webs, encircling the cunning curve in their net. The draughtsmanship is so accurate that it is easy to deduce from it beautiful theorems which would be very laborious to work out by the calculus.

I submit the geometrical masterpieces to my chief-inspector, who is himself said to be smitten with geometry. I modestly describe the method of construction, I call his attention to the fine deductions which the drawing enables one to make. It is labour lost: he gives but a heedless glance at my sheets and flings each on the table as I hand it to him.

"Alas!" said I to myself. "There is a storm brewing; the cycloid won't save you; it's your turn for a bite from the Crocodile!"

Not a bit of it. Behold the bugbear growing genial. He sits down on a bench, with one leg here, another there, invites me to take a seat by his side and, in a moment, we are discussing graphics. Then, bluntly:

"Have you any money?" he asks.

Astounded at this strange question, I answer with a smile.

"Don't be afraid," he says. "Confide in me. I'm asking you in your own interest. Have you any capital?"

"I have no reason to be ashamed of my poverty, Monsieur l'inspecteur général. I frankly admit, I possess nothing; my means are limited to my modest salary."

A frown greets my answer; and I hear, spoken in an undertone, as though my confessor were talking to himself:

"That's sad, that's really very sad."

Astonished to find my penury treated as sad, I ask for an explanation: I was not accustomed to this solicitude on the part of my superiors.

"Why, yes, it's a great pity," continues the man reputed so terrible. "I have read your articles in the *Annales des sciences naturelles*. You have an observant mind, a taste for research, a lively style and a ready pen. You would have made a capital university-professor."

"But that's just what I'm aiming at!"

"Give up the idea."

"Haven't I the necessary attainment?"

"Yes, you have; but you have no capital."

The great obstacle stands revealed to me: woe to the poor in pocket! University teaching demands a private income. Be as ordinary, as commonplace as you please; but, above all, possess the coin that lets you cut a dash. That is the main thing; the rest is a secondary condition.

And the worthy man tells me what poverty in a frock-coat means. Though less of a pauper than I, he has known the mortification of it; he describes it to me, excitedly, in all its bitterness. I listen to him with an aching heart; I see the refuge which was to shelter my future crumbling before my eyes:

"You have done me a great service, sir," I answer. "You put an end to my hesitation. For the moment, I give up my plan. I will first see if it is possible to earn the small fortune which I shall need if I am to teach in a decent manner."

Thereupon we exchanged a friendship grip of the hand and parted. I never saw him again. His fatherly arguments had soon convinced me: I was prepared to hear the blunt truth. A few months earlier I had received my nomination as an assistant-lecturer in zoology at the university of Poitiers. They offered me a ludicrous salary. After paying the costs of moving, I should have had hardly three francs a day left; and, on this income, I should have had to keep my family, numbering seven in all. I hastened to decline the very great honour.

No, science ought not to practise these jests. If we humble persons are of use to her, she should

at least enable us to live. If she can't do that, then let her leave us to break stones on the highway. Oh, yes, I was prepared for the truth when that honest fellow talked to me of frock-coated poverty! I am telling the story of a not very distant past. Since then things have improved considerably; but, when the pear was properly ripened, I was no longer of an age to pick it.

However, notwithstanding Rollier's confidences, Fabre had deferred rather than definitely abandoned the execution of his project. Since his impecuniosity was the only obstacle to the realisation of his wishes, could he not seek to uplift himself, as others had done, by daring and willing? In the meantime was it not better to make a great effort in this direction than to remain for ever sunk in the material anxieties and ungrateful tasks of the *lycée?*

The question as to how to free and simultaneously uplift himself exercised the mind of Fabre at this time.

And what was I to do now [he writes] to overcome the difficulty mentioned by my inspector and confirmed by my personal experience? I would take up industrial chemistry. The municipal lectures at Saint-Martial placed a spacious and fairly well-equipped laboratory at my disposal. Why not make the most of it?

The chief manufacture of Avignon was madder. The farmer supplied the raw material to the factories, where it was turned into purer and more concentrated products. My predecessor had gone in for it and done well by it, so people said. I would follow in his footsteps and use the vats and furnaces, the expensive plant which I had inherited. So to work.

What should I set myself to produce? I proposed to extract the colouring-substance, alizarin, to separate it from the other matters found with it in the root, to obtain it in the pure state and in a form that allowed of the direct printing of the stuffs, a much quicker and more artistic method than the old dyeing process.

Nothing could be simpler than this problem, once the solution was known; but how tremendously obscure while it had still to be solved! I dare not call to mind all the imagination and patience spent upon endless endeavours which nothing, not even the madness of them, discouraged. What mighty meditations in the sombre church! What glowing dreams, soon to be followed by sore disappointment when experiment spoke the last word and upset the scaffolding of my plans! Stubborn as the slave of old amassing a peculium for his enfranchisement, I used to reply to the check of yesterday by the fresh attempt of to-morrow, often as faulty as the others, sometimes the richer by an improvement; and I went on indefatigably, for I, too, cherished the indomitable ambition to set myself free.

Should I succeed? Perhaps so. I at last had a satisfactory answer. I obtained, in a cheap and practical fashion, the pure colouring-matter, concentrated in a small volume and excellent for both printing and dyeing. One of my friends took up my process on a large scale in his works; a few calico-factories adopted the produce and expressed themselves delighted with it. The future smiled at last; a pink rift opened in my grey sky. I should possess the modest fortune without which I must deny myself the pleasure of teaching in a university. Freed of the torturing anxiety about my daily bread, I should be able to live at ease among my insects.[1]

To these delights of industrial chemistry, the mistress of her problems and rich in future promise, were added, by an additional stroke of good fortune, the flattering congratulations and encouragement of the Minister Duruy and the Emperor Napoleon.[2] It seemed as though, after struggling long against the tide, his frail vessel had a fair wind astern; it seemed about to come into port; surely at last his utmost desires were about to be realised!

Once home amidst my family, I felt a mighty load off my mind and a great joy in my heart,

[1] *Souvenirs,* x., pp. 338-43; *The Life of the Fly,* chap. xx., "Industrial Chemistry."

[2] Cf. *supra.,* p. 135.

where rang a peal of bells proclaiming the delights of my approaching emancipation. Little by little, the factory that was to set me free rose skywards, full of promises. Yes, I should possess the modest income which would crown my ambition by allowing me to descant on animals and plants in a university chair.

"Well, no," said Fate, "you shall not acquire the freedman's peculium; you shall remain a slave, dragging your chain behind you; your peal of bells rings false!"

Hardly was the factory in full swing, when a piece of news was bruited, at first a vague rumour, an echo of probabilities rather than certainties, and then a positive statement leaving no room for doubt. Chemistry had obtained the madder-dye by artificial means; thanks to a laboratory concoction, it was utterly overthrowing the agriculture and industries of my district. This result, while destroying my work and my hopes, did not surprise me unduly. I myself had toyed with the problem of artificial alizarin; and I knew enough about it to foresee that, in no very distant future, the product of the chemist's retort would take the place of the product of the fields.[1]

It was only a step from the Capitol to the Tarpeian Rock. He who but now had discovered Peru was about to feel more keenly than ever the sharp pangs of poverty; he

[1] *Souvenirs*, x., p. 353. *The Life of the Fly*, chap. xx., "Industrial Chemistry."

whom science and fortune had lately conspired to raise to one of the highest chairs in the University was to be forced to descend from the modest desk of a *lycée* professor; he whom the friendship and admiration of Duruy had dreamed, it is said, of promoting to the high dignity of tutor to the Prince Imperial [1] was now to be forbidden to teach the schoolgirls of his own Provence!

For it was about this time that "he attempted to found at Avignon a sort of system of secondary education for young girls," and delivered, in the ancient abbey of Saint-Martial, those famous free lectures which remained so celebrated in the memory of the generation of that period, and at which an eager crowd thronged to hear him, among the most assiduous members being Roumanille, the friend of Mistral, who knew the exquisite secret of weaving into his melodies "the laughter of young girls and the flowers of spring."

For no one could explain a fact better than Fabre; no one could elucidate it so fully and so clearly. No one could teach as he did, so simply, so picturesquely, yet in so original a fashion.

[1] *Revue scientifique,* May 7, 1910, speech by M. Edmond Perrier.

And he had the power of communicating to his hearers his own conviction, his profound faith, the sacred fire that inspired him, the passion which he felt for all natural things.

But there were sufficient reasons to set the sectarians all agog and excite the rancour of the envious, some regarding this great novelty of placing the natural sciences within reach of young girls as a heresy and even a scandal, others finding it unsatisfactory that this "irregular person, the child of his own solitary studies, should fill, by his work, his successes, and the magic of his teaching, a place so apart and so disproportionate. Their cavilling, their underhand cabals, their secret manœuvring won an easy triumph." In what hateful and tragic fashion we must let him tell us in his own words:

The first of these removals took place in 1870. A little earlier, a minister who has left a lasting memory in the university, that fine man Victor Duruy,[1] had instituted classes for the secondary education of girls. This was the beginning, as far as was then possible, of the burning question of

[1] Jean Victor Duruy (1811-1894), author of a number of historical works, including a well-known *Histoire des Romains*, and Minister of Public Instruction under Napoleon III. from 1863 to 1869. Cf. *The Life of the Fly*, chap. xx.—A. T. DE M.

to-day. I very gladly lent my humble aid to this labour of light. I was put to teach physical and natural science. I had faith, and was not sparing of work, with the result that I rarely faced a more attentive or interested audience. The days on which the lessons fell were red-letter days, especially when the lesson was botany and the table disappeared from view under the treasures of the neighbouring conservatories.

That was going too far. In fact, you can see how heinous my crime was: I taught those young persons what air and water are; whence the lightning comes and the thunder; by what device our thoughts are transmitted across the seas and continents by means of a metal wire; why fire burns and why we breathe; how a seed puts forth shoots and how a flower blossoms: all eminently hateful things in the eyes of some people, whose feeble eyes are dazzled by the light of day.

The little lamp must be put out as quickly as possible and measures taken to get rid of the officious person who strove to keep it alight. The scheme was darkly plotted with the old maids who owned my house and who saw the abomination of desolation in these new educational methods. I had no written agreement to protect me. The bailiff appeared with a notice on stamped paper. It baldly informed me that I must move out within four weeks from date, failing which the law would turn my goods and chattels into the street. I had hurriedly to provide myself with a dwelling. The first house which we found happened to be at

Orange. Thus was my exodus from Avignon effected.[1]

After this we understand why it was that Fabre cried:

"It is all over; the downfall of my hopes is complete!"

But no, beloved master! All was not over. The immortal work with which your name is connected was as yet to be begun. This ruin, this mortification, this grievous overthrow of all your hopes in connection with the University were even needed to lead you back to the fields, to enable you to raise, in all its amplitude and its exquisite originality, the scientific edifice of which you may say, with the ancient poet: *Exegi monumentum aere perennis.*[2]

M. Edmond Perrier very judiciously remarked, in his speech at Sérignan: "In Paris, in a great city, you would have had great difficulty in finding your beloved insects, and entomology would have lost a great part of those magnificent observations which are the glory of French science."

So it was, in reality, advantageous, as regards his destiny, that Fabre suffered, at this

[1] *Souvenirs,* II., pp. 125-126. *The Mason Bees,* chap. V., "The story of my Cats."

[2] HORACE, *Ode* XXX., Bk. iii.

juncture of his history, this accumulation of trials, so grievous to experience, yet so fortunate in their consequences that they remind us of the sublime passage of the Gospel, whose sayings regarding eternal life are often rich in lessons for this our present life: "He that loses his life shall save it."

(*End of the first volume in the French edition.*)

CHAPTER XIII

RETIREMENT: ORANGE

IT is commonly enough thought that a professor on his vacations and a pensioned official are very much the same—that both are created and put into the world merely to kill time and savour the delights of *far niente*. Such was never Fabre's opinion. While he loved nothing so well as his Thursdays and vacations, this was because he then had more freedom to devote himself to his favourite studies. If he resigned himself readily to a premature retirement, if he was even happy to shake off the yoke of the *lycée*, this was because he had quite definitely determined to work more quietly and continuously; because he hoped to increase the ardour and fertility of his mind by a closer and more lasting intercourse with the world of Nature.

At the same time he found himself compelled to look to his pen for that assurance of material life which his retorts had refused him, and which his meagre professor's pension afforded but insufficiently. "What is to be done now?" he cried, after the col-

lapse of his industrial hopes and professorial ambitions. "Let us try another lever and resume rolling the Sisyphean stone. Let us seek to draw from the ink-pot what the madder-vat and the *Alma Mater* refuses us. *Laboremus!*"

Laboremus! That indeed is the fitting motto for this period of his life, no less than for the earlier part of it. For it was then that he wrote the greater number of his numerous handbooks, now classic, and it was then that he began to write and to publish his *Souvenirs entomologiques,* without ceasing on that account his great life-work, the passionate observation of the living world.

Still, it is not so much the man's work as the man, and not so much the student as the man himself, that we wish to evoke in this chapter.

To live happily, we must live hidden from sight, far from the troubles of the world, exercising our minds and cultivating our talents at leisure. Such evidently was Fabre's idea from the time of his departure from Avignon; and it plainly reveals to us one of the salient features of his moral physiognomy.

But he could not have had the illusion that in thus taking refuge from the tribulations

of which the world is the source, he was placing himself beyond the reach of any trials. Is it not written that the life of man upon earth is a perpetual struggle against suffering? And if it were not for the cruel wounds which it inflicts upon the poor human heart, we ought rather perhaps to bless this law of our destiny; for it is one of the qualities of human greatness, of the beauty of the soul as of the power of the intellect, that it does not fully reveal itself save under the discipline and empire of suffering.

Among the moral qualities of Fabre as we have been able to divine them there is one which the vicissitudes of life revealed more especially during this phase of his existence: I mean his kindliness.

Fabre had the simplicity of the kindly man as well as that of the truthful man. He, who instinctively withdrew from the gaze and the malice of men, cared nothing for their smiles or their disdain when there was a question of adding to his store of scientific data or kindly actions, however trivial the matter might be.

The following episode is illuminating. Our entomologist was interested, as a scientist, in discovering whether the bite of the Black-bellied Tarantula, deadly to insects,

was dangerous to other animals, and to man, or whether it was not, in the latter case, a negligible accident. He therefore experimented upon a bird:

I make a Tarantula bite the leg of a young, well-fledged Sparrow, ready to leave the nest. A drop of blood flows: the wounded spot is surrounded by a reddish circle, changing to purple. The bird almost immediately loses the use of its leg, which drags, with the toes doubled in; it hops upon the other. Apart from this, the patient does not seem to trouble much about his hurt; his appetite is good. My daughters feed him on flies, bread-crumb, apricot-pulp. He is sure to get well, he will recover his strength; the poor victim of the curiosity of science will be restored to liberty. This is the wish, the intention of us all. Twelve hours later, the hope of a cure increases; the invalid takes nourishment readily; he clamours for it, if we keep him waiting. But the leg still drags. I set this down to a temporary paralysis which will soon disappear. Two days after, he refuses his food. Wrapping himself in his stoicism and his rumpled feathers, the Sparrow hunches into a ball, now motionless, now twitching. My girls take him in the hollow of their hands and warm him with their breath. The spasms become more frequent. A gasp proclaims that all is over. The bird is dead.

There was a certain coolness among us at the evening meal. I read mute reproaches, because

of my experiment, in the eyes of my home-circle; I read an unspoken accusation of cruelty all around me. The death of the unfortunate Sparrow had saddened the whole family. I myself was not without some remorse of conscience: the poor result achieved seemed to me too dearly bought. I am not made of the stuff of those who, without turning a hair, rip up live Dogs to find out nothing in particular.[1]

Is there not something touching in the simplicity of the father who, with such good will, becomes a child with his children; and in the compassionate kindness of the man who cannot without grieving witness the death of a Sparrow? Fabre indeed possessed in no common degree that quality which, according to Saint Augustine, is the foremost characteristic of spiritual beauty and, according to the poet of the animals, constitutes the essential nobility of the French mind:

"La bonté, c'est le fond de tout âme française." (Kindness, the base of every Frenchman's mind.)

It was, at all events, the basis of his own. And we are conscious of a fundamental emotion, an intimate reprobation, that ascends from the depths of his being to oppose all ideas of violence and hatred.

[1] *Souvenirs*, II., pp. 202-203. *The Life of the Spider*, chap. i., "The Black-bellied Tarantula."

It does not surprise us to see the serene kindliness of our compatriot veiling itself in dejection and becoming almost pugnacious when confronted by the melancholy exploits of force; for how could he remain unaffected before the stupendous barbarism and iniquity of 1870?

At the time of his retirement to Orange, Fabre was already the father of five children: Antonia, Aglaé, Claire, Emile, and Jules, who, in course of time, were joined by three others, Paul, Anna, and Marie-Pauline.

It was not with Fabre as with some intellectuals, whose thoughts and life remain almost strangers to the home which they establish one day as though in a moment of distraction, and who divide their lives into two parts—one being devoted to their professional labours and the other reserved for the exigencies of family life.

Like the *pagès* of his native country who live surrounded by their wives and children, sharing their tasks and breaking bread with them, Fabre loved to make his family share in his work as well as in his leisure. He too was a worker in the fields, and was persuaded that, just as there can never be too many hands at work to extract their wealth, so there could never be too many eyes at

work contemplating their wonders. He made all his children, little as well as big, boys and girls, so many collaborators in his researches, and he loved to scatter their names about the pages of his books. And it is not the least charm of the *Souvenirs* that we meet in them, at every step, the father hand in hand with his children. Passing to and fro, like a refreshing breeze that blows through the scientific aridities of the subject, we feel a twofold current of sympathy flowing from the father to his children and the naturalist to his insects.

Incapable of living without either of them, he found a way to devote himself to both, and so closely that the bond between them was truly one that held fast in life and death. Aglaé, Antonia, Claire, Emile, and Jules were recruited in turn, and Fabre informs us that their help was often of the greatest value in his entomological researches. And he liked to attach his children's names to those of his insects and his discoveries. Jules above all was distinguished by these entomological honours, which a father's gratitude piously laid, with regretful tears, upon his untimely grave.

Not content with dedicating to him the first volume of his *Souvenirs,* Fabre again

did homage to Jules in the second volume:

To my Son Jules.—Beloved child, my zealous collaborator in the study of insects, my perspicacious assistant in the study of plants, it was for your sake that I began this volume; I have continued it for the sake of your memory, and I shall continue it in the bitterness of my mourning. Ah! how hateful is death when it reaps the flower in all the radiance of its blossoming! Your mother and your sisters bring to your tomb wreaths gathered in the rustic flower-bed that you delighted in. To these wreaths, faded by a day's sunshine, I add this book, which, I hope, will have a to-morrow. It seems to me that it thus prolongs our common studies, fortified as I am by my indomitable faith in a reawakening in the Beyond.[1]

When the separation from loved ones wounds the heart so grievously and wrings from the soul such accents of hope and faith, we need seek no other standard to judge a man's moral worth.

The spectacle of a man, thus moved by the death of his dear ones, who yet welcomes his own death with serenity, is admirable. Such was the case with Fabre, as proved by the following episode of the same date—*i.e.* 1879.

[1] *Souvenirs*, II., p. 1.

Retirement: Orange

I am living at Orange in the year 1879. My house stands alone among the fields. . . .

After a hard winter, when the snow had lain on the ground for a fortnight, I wanted once more to look into the matter of my Halicti. I was in bed with pneumonia and to all appearances at the point of death. I had little or no pain, thank God, but extreme difficulty in living. With the little lucidity left to me, being able to do no other sort of observing, I observed myself dying; I watched with a certain interest the gradual falling to pieces of my poor machinery. Were it not for the terror of leaving my family, who were still young, I would gladly have departed. The after-life must have so many higher and fairer truths to teach us.

My hour had not yet come. When the little lamps of thought began to emerge, all flickering, from the dusk of unconsciousness, I wished to take leave of the Hymenoptera, my fondest joy, and first of all of my neighbour, the Halictus.[1] My son Emile took the spade and went and dug the frozen ground. Not a male was found, of course; but there were plenty of females, numbed with the cold in their cells.

A few were brought for me to see, and, roused from their torpor by the warmth of the room, they

[1] The Halicti produce two generations each year: one, in the spring, is the issue of mothers who, fecundated in the autumn, have passed through the winter; the other, produced in the summer, is the fruit of *parthenogenesis*, that is, of procreation by the maternal virtualities alone. Of the concourse of the two sexes only females are born; parthenogenesis gives rise to both males and females.

began to wander about my bed, where I followed them vaguely with my failing eyes.[2]

It is very true that, on leaving Orange, Fabre still had "much to learn" from the company of Hymenoptera and other insects —the great period of his entomological career had not yet begun—but the regret with which he left Orange was soon dissipated by the wealth of observations and the facilities for study which his new home offered him.

Living in retirement at Orange, on the confines of the town, at the gate of the fields, he was as yet only in sight of the promised land. At Sérignan, in the quiet obscurity of quite a little village, in the very midst of "the great museum of the fields," he was truly in possession of the country of his dreams; he had found his ideal abiding-place, the spot which was in most perfect conformity with his tastes and most favourable to his genius.

[1] *Souvenirs,* VIII., pp. 144-160. *The Bramble-Bees,* chap. xiv., "Parthenogenesis." It was only a later date, by combining a series of successive observations which were spread over a great length of years, that he was able to define exactly the various modes of generation employed by the Halicti, as described in the preceding note.

CHAPTER XIV

THE HERMIT OF SÉRIGNAN (1879-1910)

STARTING from Orange and crossing the Aygues, a torrent whose muddy waters are lost in the Rhône, but whose bed is dried by the July and August suns, leaving only a desert of pebbles, where the Mason-bee builds her pretty turrets of rock-work, we come presently to the Sérignaise country; an arid, stony tract, planted with vines and olives, coloured a rusty red, or touched here and there with almost the hue of blood; and here and there a grove of cypress makes a sombre blot. To the north runs a long black line of hills, covered with box and ilex and the giant heather of the south. Far in the distance, to the east, the immense plain is closed in by the wall of Saint-Amant and the ridge of the Dentelle, behind which the lofty Ventoux rears its rocky, cloven bosom abruptly to the clouds. At the end of a few miles of dusty road, swept by the powerful breath of the mistral, we suddenly reach a little village. It is a curious little community, with its central street adorned by a double row of plane-trees, its leaping fountains, and its almost Italian air. The houses are lime-washed, with flat roofs; and sometimes, at the side of some small or decrepit dwelling, we see the un-

expected curves of a loggia. At a distance the façade of the church has the harmonious lines of a little antique temple; close at hand is the graceful campanile, an old octagonal tower surmounted by a narrow mitre wrought in hammered iron, in the midst of which are seen the black profiles of the bells.

At the entrance of the little market-town, in a solitary corner, in the centre of an enclosure of lofty walls, which are taller than the crests of the pines and cypresses, Fabre's dwelling is hidden away. A pink house with green shutters, half-hidden amid the sombre foliage, appears at the end of an alley of lilacs, "which sway in the spring under the weight of their balmy thyrsi." Before the house are the shady plane-trees, where during the burning hours of August the cicada of the flowering ash, the deafening *cacan,* concealed beneath the leaves, fills the hot atmosphere with its eager cries, the only sound that disturbs the profound silence of this solitude.

There, in this "hermit's retreat," as he himself has defined it, the sage is voluntarily sequestered; a true saint of science, an ascetic living only on fruits, vegetables, and a little wine; so in love with retirement that even in the village he was for a long time almost unknown, so careful was he to go round instead of through it on his way to the neighbouring mountain, where he would often spend whole days alone with wild nature.

It is in this silent Thebaïd, so far from the atmosphere of cities, the vain agitations and storms of

the world, that his life has been passed, in unchanging uniformity; and here he has been able to pursue, with resolute labour and incredible patience, that prodigious series of marvellous observations which for nearly fifty years he has never ceased to accumulate.

François Sicard, in his faultless medal and his admirable bust, has succeeded with rare felicity in reproducing for posterity this rugged, shaven face, full of laborious years; a peasant face, stamped with originality, under the wide felt hat of Provence; touched with geniality and benevolence, yet reflecting a world of energy. Sicard has fixed for ever this strange mask; the thin cheeks, ploughed into deep furrows, the strained nose, the pendent wrinkles of the throat, the thin, shrivelled lips, with an indescribable fold of bitterness at the corners of the mouth. The hair, tossed back, falls in fine curls over the ears, revealing a high, rounded forehead, obstinate and full of thought. But what chisel, what graver could reproduce the surprising shrewdness of that gaze, eclipsed from time to time by a convulsive tremor of the eyelids! What Holbein, what Chardin could render the almost extraordinary brilliance of those black eyes, those dilated pupils—the eyes of a prophet, a seer; singularly wide and deeply set, as though gazing always upon the mystery of things, as though made expressly to scrutinise Nature and decipher her enigmas? Above the orbits, two short, bristling eyebrows seem set there to guide the vision; one, by dint of knitting itself above the magnifying-glass,

has retained an indelible fold of continual attention; the other, on the contrary, always updrawn, has the look of defying the interlocutor, of foreseeing his objections, of waiting with an ever-ready return-thrust.[1]

Is not the reader dazzled by the brilliant colours, the warm tones of this picture? The Provençal light shines upon his face, splendidly avenging us for the obscurity which had too long withheld him from the admiration of the world.

We could not choose a better guide to introduce us to the home of the Hermit of Sérignan, and to give us access to his person.

In front of the house, beyond a low wall, of a comfortable height to lean on, is the most unexpected and improbable of gardens, a kind of *couderc*—that is, a tract of poor, stony ground, of which the naturalist has made a sort of wild park, jealously protected from the access of the profane, and literally invaded by all sorts of plants and insects. Fabre speaks of this retreat as follows:

This is what I wished for, *hoc erat in votis:* a bit of land, oh, not so very large, but fenced in, to avoid the drawbacks of a public way; an abandoned, barren, sun-scorched bit of land, favoured

[1] *Fabre, Poet of Science,* G. V. Legros, pp. 108-115.

by thistles and by Wasps and Bees. Here, without distant expeditions that take up my time, without tiring rambles that strain my nerves, I could contrive my plans of attack, lay my ambushes, and watch their effects at every hour of the day. *Hoc erat in votis.* Yes, this was my wish, my dream, always cherished, always vanishing into the mists of the future.

And it is no easy matter to acquire a laboratory in the open fields, when harassed by a terrible anxiety about one's daily bread. For forty years have I fought, with steadfast courage, against the paltry plagues of life; and the long-wished-for laboratory has come at last. What it has cost me in perseverance and relentless work I will not try to say. It has come; and with it—a more serious condition—perhaps a little leisure. I say perhaps, for my leg is still hampered by a few links of the convict's chain.

But this is not my business for the moment: I want to speak of the bit of land long cherished in my plans to form a laboratory of living entomology, the bit of land which I have at last obtained in the solitude of a little village. It is a *harmas,* the name given, in this district,[1] to an untilled, pebbly expanse abandoned to the vegetation of the thyme. It is too poor to repay the work of the plough; but the sheep passes there in spring, when it has chanced to rain and a little grass shoots up.

[1] The country round Sérignan, in Provence.—A. T. DE M.

My *harmas,* however, because of its modicum of red earth, swamped by a huge mass of stones, has received a rough first attempt at cultivation: I am told that vines once grew here. The three-pronged fork is the only implement of husbandry that can penetrate such a soil as this; and I am sorry, for the primitive vegetation has disappeared. No more thyme, no more lavender, no more clumps of kermes-oak, the dwarf oak that forms forests across which we step by lengthening our stride a little. As these plants, especially the first two, might be of use to me by offering the Bees and Wasps a spoil to plunder, I am compelled to reinstate them in the ground whence they were driven by the fork.

What abounds without my mediation is the invaders of any soil that is first dug up and then left for a long time to its own resources. We have, in the first rank, the couch-grass, that execrable weed which three years of stubborn warfare have not succeeded in exterminating. Next, in respect of number, come the centauries, grim-looking one and all, bristling with prickles or starry halberds. They are the yellow-flowered centaury, the mountain centaury, the star-thistle and the rough centaury: the first predominates. Here and there, amid their inextricable confusion, stands, like a chandelier with spreading orange flowers for lights, the fierce Spanish oyster-plant, whose spikes are strong as nails. Above it towers the Illyrian cottage-thistle, whose straight and solitary stalk soars to a height of three to six feet and ends in

large pink tufts. Its armour hardly yields before that of the oyster-plant. Nor must we forget the lesser thistle tribe, with, first of all, the prickly or "cruel" thistle, which is so well armed that the plant-collector knows not where to grasp it; next, the spear-thistle, with its ample foliage, each of its nervures ending in a spear-head; lastly, the black knap-weed, which gathers itself into a spiky knot. In among these, in long lines armed with hooks, the shoots of the blue dewberry creep along the ground. To visit the prickly thicket where the Wasp goes foraging, you must wear boots that come to mid-leg or else resign yourself to a smarting in the calves. As long as the ground retains some traces of the vernal rains, this rude vegetation does not lack a certain charm. But let the droughs of summer come and we see but a desolate waste, which the flame of a match would set ablaze from one end to the other. Such is, or rather was, when I took possession of it, the Eden of bliss where I mean to live henceforth alone with the insects. Forty years of desperate struggle have won it for me.

Eden, I said; and, from the point of view that interests me, the expression is not out of place. This accursed ground, which no one would have had at a gift to sow with a pinch of turnip-seed, is an earthly paradise for the Bees and the Wasps. Its mighty growth of thistles and centauries draws them all to me from everywhere around. Never, in my insect-hunting memories, have I seen so large a population at a single spot; all the trades have

made it their rallying-point. Here come hunters of every kind of game, builders in clay, weavers of cotton goods, collectors of pieces cut from a leaf or the petals of a flower, architects in pasteboard, plasterers mixing mortar, carpenters boring wood, miners digging underground galleries, workers in goldbeater's skin, and many more.

If I tried to continue this record of the guests of my thistles, it would muster almost the whole of the honey-yielding tribe. A learned entomologist of Bordeaux, Professor Pérez, to whom I submit the naming of my prizes, once asked me if I had any special means of hunting, to send him so many rarities and even novelties. The whole secret of my hunting is reduced to my dense nursery of thistles and centauries.[1]

What has become of the days when the entomologist lived far from his beloved insects, when he had to seek them in all directions, and even to chase them through fields and vineyards, at the risk of alarming the passers-by or having a crow to pluck with the *garde-champêtre?* To-day the insects are always there, within reach of his eyes and his hand. He has hardly to look for them nowadays. They come to him, into his garden and even into his house.

All Fabre's preferences are for the insect,

[1] *Souvenirs,* II., pp. 1-8. *The Life of the Fly,* chap. i., "The Harmas."

but he loves the other creatures also and gladly gives them the rights of citizenship in the *harmas*. He has a peculiar sympathy for those that are misunderstood and scorned by the vulgar.

In front of the house is a large pond, fed by the aqueduct that supplies the village pumps with water. Here, from half a mile and more around, come the Frogs and Toads in the lovers' season. In May, as soon as it is dark, the pond becomes a deafening orchestra: it is impossible to talk at table, impossible to sleep.

We have had a glimpse of the natural wealth of the *harmas*, but we have no idea as yet of some of the artificial improvements which the inventive industry of the naturalist has introduced.

I have [writes Fabre] wished for a few things in my life, none of them capable of interfering with the common weal. I have longed to possess a pond, screened from the indiscretion of the passers-by, close to my house, with clumps of rushes and patches of duckweed. There, in my leisure hours, in the shade of a willow, I should have meditated upon aquatic life, a primitive life, easier than our own, simpler in its affections and its brutalities. I should have studied the eggs of the Planorbis, a glairy nebula wherein foci of life are

condensed even as suns are condensed in the nebulæ of the heavens. I should have admired the nascent creature that turns, slowly turns, in the orb of its egg and describes a volute, the draft perhaps of the future shell. No planet circles round its centre of attraction with greater geometrical accuracy.

I should have brought back a few ideas from my frequent visits to the pond. Fate decided otherwise: I was not to have my sheet of water. I have tried the artificial pond, between four panes of glass. A poor makeshift!

A louis has been overlooked in a corner of a drawer. I can spend it without seriously jeopardising the domestic balance. The blacksmith makes me the framework of a cage out of a few iron rods. The joiner, who is also a glazier on occasion—for, in my village, you have to be a Jack-of-all trades if you would make both ends meet—sets the framework on a wooden base and supplies it with a movable board as a lid; he fixes thick panes of glass in the four sides. Behold the apparatus, complete, with a bottom of tarred sheet-iron and a tap to let the water out. Many an inquisitive caller has wondered what use I intend to make of my little glass trough. The thing creates a certain stir. Some insist that it is meant to hold my supplies of oil and to take the place of the receptacle in general use in our parts, the urn dug out of a block of stone. What would those utilitarians have thought of my crazy mind, had they known that my costly gear would merely

serve to let me watch some wretched animals kicking about in the water?[1]

The delight of my earliest childhood, the pond, is still a spectacle of which my old age can never tire.

But even with all the visions which it evokes, how far inferior is the "pond" of Sérignan to the pond of Saint-Léons, "the pond with the little ducks on it, so rich in illusions! Such a pond is not met with twice in a lifetime. One needs to be equipped with one's first pair of breeches and one's earliest ideas in order to have such luck!"[2]

In spring, with the hawthorn in flower and the Crickets at their concerts, a second wish often came to me. Beside the road I light upon a dead Mole, a Snake killed with a stone, victims both of human folly. The two corpses, already decomposing, have begun to smell. Whoso approaches with eyes that do not see turns away his head and passes on. The observer stops and lifts the remains with his foot; he looks. A world is swarming underneath; life is eagerly consuming the dead. Let us replace matters as they were and leave death's artisans to their task. They are engaged in a most deserving work.

[1] *Souvenirs*, VII., pp. 270-273. *The Life of the Fly*, chap. vii., "The Pond."
[2] *Ibid.*, VII., 260-270.

To know the habits of those creatures charged with the disappearance of corpses, to see them busy at their work of disintegration, to follow in detail the process of transmutation that makes the ruins of what has lived return apace into life's treasure-house: these are things that long haunted my mind. I regretfully left the Mole lying in the dust of the road. I had to go, after a glance at the corpse and its harvesters. It was not the place for philosophising over a stench. What would people say who passed and saw me!

I am now in a position to realise my second wish. I have space, air, and quiet in the solitude of the *harmas*. None will come here to trouble me, to smile or to be shocked at my investigations. So far, so good; but observe the irony of things: now that I am rid of passers-by, I have to fear my cats, those assiduous prowlers, who, finding my preparations, will not fail to spoil and scatter them. In anticipation of their misdeeds, I establish workshops in mid-air, whither none but genuine corruption-agents can come, flying on their wings. At different points in the enclosure, I plant reeds, three by three, which, tied at their free ends, form a stable tripod. From each of these supports I hang, at a man's height, an earthenware pan filled with fine sand and pierced at the bottom with a hole to allow the water to escape, if it should rain. I garnish my apparatus with dead bodies. The Snake, the Lizard, the Toad receive the preference, because of their bare skins, which enable me better to follow the first attack and the work of the in-

vaders. I ring the changes with furred and feathered beasts. A few children of the neighbourhood, allured by pennies, are my regular purveyors. Throughout the good season they come running triumphantly to my door, with a Snake at the end of a stick, or a Lizard in a cabbage-leaf. They bring me the Rat caught in a trap, the Chicken dead of the pip, the Mole slain by the gardener, the Kitten killed by accident, the Rabbit poisoned by some weed. The business proceeds to the mutual satisfaction of sellers and buyer. No such trade had ever been known before in the village, nor ever will be again.[1]

Yet despite all his inventions Fabre had no illusion as to their value. He well knew that art cannot replace nature who said, speaking of his glass-walled "pond," the aquarium of which he seemed so proud: "A poor makeshift, after all!" You may think that he is reverting to his childhood and that he will tell us again of the pond with its ducklings. But he tells us something far better:

"Not all our laboratory aquaria are worth the print left in the clay by the shoe of a mule, when a shower has filled the humble

[1] *Souvenirs*, VIII., 278-280, 255-295. *The Life of the Fly*, chap. v., "The Greenbottles"; *The Mason-wasps*, chap. ix., "Insect Geometry"; *The Life of the Fly*, chap. ix., "The Grey Flesh-Flies."

basin and life has peopled it with her marvels." [1]

Who but he could have found such a pearl in this clay?

[1] *Souvenirs*, VIII., p. 228. *The Life of the Fly*, chap. ix., "The Greenbottles."

CHAPTER XV

THE HERMIT OF SÉRIGNAN (CONTINUED)

WHILE the domain of the landowner and manufacturer ended at the walls of his field of pebbles and botanical garden, that of the entomologist extended far beyond them, as far as his eyes could see and his steps lead him.

For this reason a panoramic view of the surrounding country is desirable.

With its peaceful plains, its gracious hills, overgrown with strawberry-tree and ilex, and the sublime mountain of Provence rising upon the horizon, with its varied outlines and its sun-illumined flanks, the Sérignan landscape gently forces itself upon the spectator's attention. And if the spirit moved him, Fabre had only to raise his head from his apparatus to find all about him something to soothe the eye and refresh the mind.

But however keen his feeling for the beauties of Nature, it is not so much as artist or dilettante but as the insect historiographer that he appreciates the value of the land-

scape, and the wealth of the plains and hills outspread before him.

From this point of view the whole surroundings of his hermitage seem as though created to continue and complete the *harmas*, and the scientific pleasures which this affords him.

The Gymnopleuri abourd in the pebbly plains of the neighbourhood, where the sheep pass amid the lavender and thyme; and, should we wish to vary the scene of observation, the mountain [1] is but a few hundred steps away, with its tangle of arbutus, rock-roses, and arborescent heather; with its sandy spaces dear to the Bembeces; with its marly slopes exploited by different Wasps and Bees.

We have already made mention of the Aygues, and the time has come to pay it a formal visit, as one of the favourite haunts of the Sérignan hermit:

The geographers define the Aygues as a watercourse. As an eye-witness I should call it rather a stream of flat pebbles. Understand me: I do not mean that the dry pebbles flow of their own accord; the feeble incline would not permit of such an avalanche. But let it rain: then they will flow. Then, from my home, which is more than a mile distant, I hear the uproar of the clashing pebbles.

[1] Mont Ventoux, an outlying summit of the Alps, 6270 feet high. Cf. *Insect Life*, chap. xiii.—A. T. DE M.

During the greater part of the year the Aygues is a vast sheet of flat white stones; of the torrent only the bed is left, a furrow of enormous width, comparable to that of its mighty neighbour, the Rhône. When persistent rains fall, when the snows melt on the slopes of the Alps, the dry furrow fills for a few days, complaining, overflowing to a great distance, and displacing, amid the uproar, its pebbly banks. Return a week later: the din of the flood is succeeded by silence. The terrible waters have disappeared, leaving on the banks, as a trace of their brief passage, some wretched muddy puddles quickly drunk up by the sun.

These sudden floods bring a thousand living gleanings, swept off the flanks of the mountains. The dry bed of the Aygues is a most curious botanical garden. You may find there numbers of vegetable species swept down from the higher regions, some temporary, dying without offspring in a season, others permanent, adapting themselves to the new climate. They come from far away from a great height, these exiles; to pluck certain of them in their actual home you would have to climb Ventoux, passing the girdle of beeches and reaching the height at which woody vegetation ceases.

An insect which is sometimes found by chance in the osier-beds of the Aygues, and is by itself worth the journey, is the Apoderus of the hazel-tree.

It tells us also many things, this little red Weevil "from the heights rich in hazel-bushes"

and carried by the storm into the alder-thickets of the Aygues.

It reminds us, too, of that other emigrant, whose intimate acquaintance it has become.

And we are touched by the analogy between its fate and his own. Fabre too was a child of the heights rich in hazel-bushes.[1] He too had to leave the place of his birth, carried away by the storm that tore him from the bosom of his native mountains to bear him into the plains of Provence. He too made the voyage with very poor and very fragile equipment. For a long time, terribly tossed by the waves, he was more than once sorely bruised, but was yet not broken upon the stones of the torrent; more than once he was whirled suddenly round, but he nevertheless continued to pursue his aim, and finally he pierced the husk and emerged from the shell, to give his activity free scope, as soon as he was able to free himself and establish his lot in a favourable environment.

However, contrary to what occurs in the case of the Apoderus, the conditions of his life seem

[1] Fabre lived the first years of his life (cf. chap. i.) on the mountains of Lavaysse, which are almost of the birth and bifurcation of the two ranges of the Levezon and the Palanger. In the language of his country La Vaysse, pronounced Lo Baïsso, means "the hazel-bush."

An alien zoology too is represented in the osier-beds of the Aygues, whose peace is never disturbed save in freshets of exceptional duration. The wild spates of the Aygues bring into our countryside and strand in the osier-thickets the largest of our Snails, the glory of Burgundy, *Helix pramatias.*

to have been modified as profoundly as those of his geographical habitat; they became perhaps even further removed from those of his origin and his forebears. We know what his paternal ancestors were, and that they had no intimate knowledge of the insect world. His mother's people were equally regardless of and devoid of affection for the little creatures that so absorbed and delighted him.[1]

I did not know my maternal grandfather. This venerable ancestor was, I have been told, a process-server in one of the poorest parishes of the Rouergue.[2] He used to engross on stamped paper in a primitive spelling. With his well-filled pen-case and ink-horn, he went drawing out deeds up hill and down dale, from one insolvent wretch to another more insolvent still. Amid his atmosphere of pottifoggery, this rudimentary scholar, waging battle on life's acerbities, certainly paid no attention to the insect; at most, if he met it, he would crush it under foot. The unknown animal, suspected of evil-doing, deserved no further inquiry. Grandmother, on her side, apart from her housekeeping and her beads, knew still less about anything. She looked on the alphabet as a set of hieroglyphics only fit to spoil your sight for nothing, unless you were scribbling on paper bearing

[1] *Souvenirs,* VI., pp. 26-37, 42. *The Life of the Fly,* chap. V., "Heredity."

[2] A district of the province of Guienne, having Rodez for its capital. The author's maternal grandfather, Salgues by name, was the *huissier,* or, as we should say, sheriff's officer, of Saint-Léons.—A. T. DE M.

the government stamp. Who in the world, in her day among the small folk, dreamt of knowing how to read and write? That luxury was reserved for the attorney, who himself made but a sparing use of it. The insect, I need hardly say, was the least of her cares. If sometimes, when rinsing her salad at the tap, she found a Caterpillar on the lettuce-leaves, with a start of fright she would fling the loathsome thing away, thus cutting short relations reputed dangerous. In brief, to both my maternal grandparents the insect was a creature of no interest whatever and almost always a repulsive object, which one dared not touch with the tip of one's finger. Beyond a doubt, my taste for animals was not derived from them. Nor from either of my own parents. My mother, who was quite illiterate, having known no teacher but the bitter experience of a harassed life, was the exact opposite of what my tastes required for their development. My peculiarity must seek its origin elsewhere; that I will swear.

Nor shall I find it in my father. The excellent man, who was hard-working and sturdily-built like grandad, had been to school as a child. He knew how to write, though he took the greatest liberties with spelling; he knew how to read and understood what he read, provided the reading presented no more serious literary difficulties than occurred in the stories in the almanack. He was the first of his line to allow himself to be tempted by the town, and he lived to regret it. Badly off, having but little outlet for his industry, making

God knows what shifts to pick up a livelihood,[1] he went through all the disappointments of the countryman turned townsman. Persecuted by bad luck, borne down by the burden for all his energy and good will, he was far indeed from starting me in entomology. He had other cares, cares more direct and more serious. A good cuff or two when he saw me pinning an insect to a cork was all the encouragement that I received from him. Perhaps he was right.

The conclusion is positive: there is nothing in heredity to explain my taste for observation. You may say that I do not go far enough back. Well, what should I find beyond the grandparents where my facts come to a stop? I know, partly. I should find even more uncultured ancestors: sons of the soil, ploughmen, sowers of rye, neat-herds; one and all, by the very force of things, of not the least account in the nice matters of observation.[2]

Between the parents and the son, what a difference, what a change of life and of destiny! *Quantum mutatus ab illis!* This, no doubt, is the first thing to strike one; and here, too, we have one of the most salient features of the superiority of the human intelligence; this almost infinite possibility of

[1] The author's father kept a café at Pierrelatte and other small towns in the south of France.—A. T. DE M.

[2] *Souvenirs,* VI., pp. 26-37, 42. *The Life of the Fly,* chap. v., "Heredity."

transformation and progress, which forms such a striking contrast with the rigid immutability of instinct which is barely susceptible of the slightest variation.

But for all this Fabre still bears the stamp of the soil and of his ancestry, and I am certain that the *pagès* of the banks of the Viaur, were they to descend to the banks of the Aygues to visit the hermit of Sérignan, would recognise by more than one characteristic the child of their native soil and their own race. Under his wide felt hat, "in his linen jacket" [1] and his heavy shoes, with a face like theirs in its simplicity and good nature, he would see almost one of themselves. And if, after entering his home, they were to follow him into the enclosure, among his crops and his appliances, if they were to see him valiantly digging up the soil of the *harmas* in search of fresh burrows of the Scarabæi, or assembling a few thick planks to contrive some new entomological apparatus, or simply beating the brushwood over his inverted umbrella in search of insects, they would certainly be tempted to join in and lend him a hand as though dealing with a fellow-labourer.

Others may be surprised to find in the

[1] Fabre had a sort of natural horror of luxury.

scholar and scientist the features and the manners of a peasant. Let us rather rejoice to see that our eminent fellow-countryman has never renounced the simplicity of his origins, and take pleasure in noting how closely the hermit of Sérignan resembles the urchin of Malaval.

We have attempted to show the hermit of Sérignan in his own setting, as he really is. It remains for us to see how he glorifies his solitude and ennobles his rustic life; how the poor, simple peasant whom he has always been has done more for science than the most elegantly dressed and profusely decorated savants.

CHAPTER XVI

THE HERMIT OF SÉRIGNAN (CONTINUED)

OH, if you could now observe at your ease, in the quiet of your study, with nothing to distract your mind from your subject, far from the profane wayfarer who, seeing you so busily occupied at a spot where he sees nothing, will stop, overwhelm you with queries, take you for some water-diviner, or —a graver suspicion this—regard you as some questionable character searching for buried treasure and discovering by means of incantations where the old pots full of coin lie hidden! Should you still wear a Christian aspect in his eyes, he will approach you, look to see what you are looking at, and smile in a manner that leaves no doubt as to his poor opinion of people who spend their time in watching Flies. You will be lucky indeed if the troublesome visitor, with his tongue in his cheek, walks off at last without disturbing things and without repeating in his innocence the disaster brought about by my two conscripts' boots.

Should your inexplicable doings not puzzle the passer-by, they will be sure to puzzle the village keeper, that uncompromising representative of the law in the ploughed acres. He has long had his eye on you. He has so often seen you wandering

about, like a lost soul, for no appreciable reason; he has so often caught you rooting in the ground, or, with infinite precautions, knocking down some strip of wall in a sunken road, that in the end he has come to look upon you with dark suspicion. You are nothing to him but a gipsy, a tramp, poultry-thief, a shady person, or, at the best, a madman. Should you be carrying your botanising-case, it will represent to him the poacher's ferret-cage; and you would never get it out of his head that, regardless of the game-laws and the rights of landlords, you are clearing the neighbouring warrens of their rabbits. Take care. However thirsty you may be, do not lay a finger on the nearest bunch of grapes: the man with the municipal badge will be there, delighted to have a case at last and so to receive an explanation of your highly perplexing behaviour.

I have never, I can safely say, committed any such misdemeanour; and yet, one day, lying on the sand, absorbed in the details of a Bembex's household, I suddenly heard beside me:

"In the name of the law, I arrest you! You come along with me!"

It was the keeper of Les Angles, who, after vainly waiting for an opportunity to catch me at fault and being daily more anxious for an answer to the riddle that was worrying him, at last resolved upon the brutal expedient of a summons. I had to explain things. The poor man seemed anything but convinced:

"Pooh!" he said. "Pooh! You will never

make me believe that you come here and roast in the sun just to watch Flies. I shall keep an eye on you, mark you! And, the first time I . . . ! However, that'll do for the present." [1]

We must recall these adventures and tribulations of his early days, and others of a like kind which we have already recorded, before we can understand the ease and the delight experienced by Fabre when he was able to take refuge within the walls of his hermitage. There, at least, no one would upset his plans, or distract him from his researches and observations. He could station himself where he pleased; he had room to turn round. He had leisure to await the opportunity and seize upon it when it occurred. He had nothing to think of now but himself and his insects, and the latter always ended by yielding to him and complying with all his wishes. They surrendered themselves to him as he to them. The days were over when he had to divide himself, as it were; when they kept him on the rack, maliciously waiting to make overtures or intimate disclosures to him just as he had to leave them, just as the class-bell rang or his holiday was over. Now there was nothing like that. He

[1] *Souvenirs*, I., pp. 134-136. *The Hunting Wasps*, chap. viii., "The Languedocian Sphex."

was theirs from morning to night, from night to morning. He was always watching, always listening; his mind was always on the alert where they were concerned. And the veils were lifted, secrets were revealed, confidences followed confidences, and a light was shed upon points which had so far remained impenetrable for a space of twenty or thirty years.

In the laboratory of the *harmas* the day begins early; as soon as nature awakens with the first rays of sunlight, directly our hermit hears the call of his vigilant life-companions. This appeal is sometimes very early, when, for example, he pushes complaisance to the length of permitting the swallow to nest in his study.

The room is closed for the night. The father lies outside; the mother does the same when the fledglings are a certain size. Then, from the earliest dawn, they are at the windows, greatly troubled by the glass barricade. In order to open the window to the afflicted parents, I have to rise hurriedly with my eyelids still heavy with sleep.

But here is something to repay the valiant naturalist for his early sacrifice: the delights of "prayer in the chapel of the lilacs."

My hermitage contains an alley of lilacs, long and wide. When May is here, when the two

rows of bushes, yielding beneath the burden of the heads of blossom, bow themselves, forming pointed arches, this walk becomes a chapel, in which the most beautiful festival of the year is celebrated in the enchanting morning sunlight; a quiet festival, without flags flapping at the windows, without the burning of gunpowder, without quarrels after drinking; the festival of the simple, disturbed neither by the raucous brass band of the dancers, nor by the shouts of the crowd. . . . Vulgar delights of maroons and libations, how far removed are you from this solemnity!

I am one of the faithful in the chapel of the lilacs. My prayer is not such as can be translated by words; it is an intimate emotion that stirs in me gently. Devoutly I make my stations from one pillar of verdure to the next; step by step I tell my observer's rosary.[1]

His "prayer is an *Oh!* of admiration," addressed to that creative Power who, in His works, is always the *geometer,* according to Plato's sublime saying: which is, that He everywhere sheds order, light, and harmony. *Ἀεὶ ὁ Θεὸς γεωμετρεῖ.*[2]

The contemplation of the living world that is stirring all about him gives him yet further cause to marvel at the wisdom of Him "who has made the plans on which life is

[1] *Souvenirs,* p. 319, viii., p. 1.
[2] *Ibid.,* p. 294.

working."[1] It is easy to understand that, for Fabre, the *harmas* assumed the colours and the charms of Eden, and that his solitary life therein was like a perpetual ecstasy.

For the rest, the scene changes as well as the protagonists. After the *harmas* with its breeding-cages and its customary inhabitants, the Sérignan country-side with its fortuitous encounters. When the weather is propitious the whole household sets out in a party. But the heat is torrid and the time of day unsuitable for walking. The naturalist sets out none the less. Bull alone dares to brave with his master the blazing heat of the sun. But even he will not hold out to the end! The goal is reached; but the most difficult thing is not to walk the distance to the post of observation; it is to settle down and remain there, under the scorching sun, waiting for an opportunity that is often slow to occur.

Ah, how long the hours seem, spent motionless, under a burning sun, at the foot of a declivity which sends the heat of an oven beating down upon you! Bull, my inseparable companion, has retired some distance into the shade, under a clump of evergreen oaks. He has found a layer of sand whose depths still retain some traces of the last shower. He digs himself a bed; and in the cool

[1] *Souvenirs*, VI., p. 295.

furrow the sybarite stretches himself flat upon his belly. Lolling his tongue and thrashing the boughs with his tail, he keeps his soft, deep gaze fixed upon me:

"What are you doing over there, you booby, baking in the heat? Come here, under the foliage; see how comfortable I am!

That is what I seem to read in my companion's eyes.

"Oh, my Dog, my friend," I should answer, if you could only understand, "man is tormented by a desire for knowledge, whereas your torments are confined to a desire for bones and, from time to time, a desire for your sweetheart! This, notwithstanding our devoted friendship, creates a certain difference between us, even though people nowadays say that we are more or less related, almost cousins. I feel the need to know things and am content to bake in the heat; you feel no such need and retire into the cool shade."

Yes, the hours drag when you lie waiting for an insect that does not come.[1]

Yet from his expeditions into the country-side, he almost always brings back some new pensioner who serves to enrich his collection of intimates admitted to the familiarities of cohabitation. For not only the *harmas* but

[1] *Souvenirs*, II., pp. 80, 81, 90, 91. *The Mason Wasps*, chap. ii., "The Odyneri."

his work-room becomes, by such chance means, an entomological museum, in which Flies, Scorpions, Caterpillars, Spiders, and I know not what else live side by side and in succession.

And when their turn is over, when the first comers have to make room for new arrivals, the master parts from his children with regret, dismissing them with the most kindly speeches, embellished by the most salutary advice. Here, for example, is the little speech which he makes to the Sphex:

You pretty Sphex-wasps hatched before my eyes, brought up by my hand, ration by ration, on a bed of sand in an old quill-box; you whose transformations I have followed step by step, starting up from my sleep in alarm lest I should have missed the moment when the nymph is bursting its swaddling-bands or the wing leaving its case; you who have taught me so much and learned nothing yourselves: O my pretty Sphex-wasps, fly away without fear of my tubes, my boxes, my bottles, or any of my receptacles, through this warm sunlight beloved of the Cicadæ; go, but beware of the Praying Mantis, who is plotting your ruin on the flowering heads of the thistles, and mind the Lizard, who is lying in wait for you on the sunny slopes; go in peace, dig your burrows, stab your Crickets scientifically and continue your kind, to procure

one day for others what you have given me: the few moments of happiness in my life![1]

One of the great joys of the Sérignan hermit is, after supper, to isolate himself in the restful quietude of the *harmas*, and there to lend an attentive ear to the least vibrations of sound from that little living world which he can no longer see but can still hear. Nothing will succeed in distracting him from this entomological concert, which is one of his delights. It makes him forget even the rejoicings of the national festival which is being celebrated close at hand, and the splendours of the starry sky that glitters above his head.

This evening in the village they are celebrating the National Festival.[2] While the little boys and girls are hopping around a bonfire whose gleams are reflected upon the church-steeple, while the drum is banged to mark the ascent of each rocket, I am sitting alone in a dark corner, in the comparative coolness that prevails at nine o'clock, harking to the concert of the festival of the fields, the festival of the harvest, grander by far than that which, at this moment, is being celebrated

[1] *Souvenirs*, I., p. 115. *The Hunting Wasps*, chap. vi., "The Larva and the Nymph."

[2] The 14th of July, the anniversary of the fall of the Bastille.—A. T. DE M.

in the village square with gunpowder, lighted torches, Chinese lanterns, and, above all, strong drink. It has the simplicity of beauty and the repose of strength.

It is late; and the Cicadæ are silent. Glutted with light and heat, they have indulged in symphonies all the livelong day. It is now the time of the nocturnal performers. Hard by the place of slaughter, in the green bushes, a delicate ear perceives the hum of the Grasshoppers. It is the sort of noise that a spinning-wheel makes, a very unobtrusive sound, a vague rustle of dry membranes rubbed together. Above this dull bass there rises, at intervals, a hurried, very shrill, almost metallic clicking. There you have the air and the recitative, interspersed with pauses. The rest is the accompaniment.

Despite the assistance of a bass, it is a poor concert, very poor indeed, though there are about ten executants in my immediate vicinity. The tone lacks intensity. My old tympanum is not always capable of perceiving these subtleties of sound. The little that reaches me is extremely sweet and most appropriate to the calm of twilight. Just a little more breadth in your bow-stroke, my dear Green Grasshopper, and your technique would be better than the hoarse Cicada's, whose name and reputation you have been made to usurp in the countries of the north.

Still, you will never equal your neighbour, the little bell-ringing Toad, who goes tinkling all around, at the foot of the plane-trees, while you

click up above. He is the smallest of my batrachian folk and the most venturesome in his expeditions.

How often, at nightfall, by the last glimmers of daylight, have I not come upon him as I wandered through my garden, hunting for ideas! Something runs away, rolling over and over in front of me. Is it a dead leaf blown along by the wind? No, it is the pretty little Toad disturbed in the midst of his pilgrimage. He hurriedly takes shelter under a stone, a clod of earth, a tuft of grass, recovers from his excitement and loses no time in picking up his liquid note.

On this evening of national merry-making there are nearly a dozen of him tinkling one against the other around me. Most of them are squatting among the rows of flower-pots that form a sort of lobby outside my house. Each has his own note, always the same, lower in one case, higher in another, a short, clear note, melodious and of exquisite purity.

With their slow, rhythmical cadence, they seem to be intoning litanies. *Cluck,* says one; *click,* responds another, on a finer note; *clock,* adds a third, the tenor of the band. And this is repeated indefinitely, like the bells of the village pealing on a holiday: *cluck, click, clock! cluck, click, clock!*

As a song this litany has neither head nor tail to it; as a collection of pure sounds, it is delicious.[1]

[1] *Souvenirs,* VI., pp. 196-203, 246-247. *The Life of the Grasshopper,* chap. xiv., "The Green Grasshopper."

"A little animated clay, capable of pleasure and pain." To the scrutiny of this miracle, with its infinity of forms, Fabre devotes himself with touching sympathy and indefatigable activity. He dedicates his day to it; and at night he is still working. And in this work, which seems to admit of no relaxation, he appears to know nothing of fatigue. The love of his task upholds him and inspires him. When night has fallen, the observer has still one resource left; he can listen for the rustle or the song of the insect that has so far escaped him in its coming and going. We might, perhaps, have discovered the insect, but he discovers something very different. He makes a series of observations by the light of a lantern in the brushwood or before the apparatus in the *harmas*.

During the two hottest months, when the darkness is profound and a little coolness follows the furnace of the day, it is easy for me, with a lantern in my hand, to watch that magnificent Spider, the Epeira, in the manufacture of her web. She has established herself at a height convenient for observation, between a row of cypress-trees and a thicket of laurels, at the entrance of a path frequented by nocturnal moths. The situation, it seems, is a good one, for the Epeira does not change it all

the season, although she renews her net almost every night.

When twilight is over, we punctually set out to pay her a family visit. Old and young alike are amazed by her gyrations in the midst of her quivering cordage, and we marvel at her impeccable geometry as her web takes shape. Gleaming in the rays of the lantern, the fabric becomes a fairy rose-window which seems to be woven of moon-beams.

What a pity that we cannot wait for the completion of a task so artistically begun! But the hour is late, and we have still to pay a visit to the Languedocian Scorpion, a lover of darkness who has his own hours for going abroad and rarely shows himself save at night. Accordingly, it has taken time to secure the last word of his history.

Rearing the Scorpion in a breeding-cage will perhaps give better results, and in any case will facilitate nocturnal observations which alone may shed a little light on the obscure habits of this unsociable hermit.

Interrogated by lantern-light, the Arachnoid will indeed tell us more during a few seconds of stealthy inspection than during days and weeks of diurnal hunting. His operations are, as a matter of fact, such as call for closed doors, and would rightly

shrink from displaying themselves in broad daylight.

I have prepared beforehand the great glass cage, peopled with twenty-five inhabitants, each with his tile. Every night, from the middle of April, as darkness falls, there is great animation in the glass palace. By day seemingly to be deserted, it becomes a cheerful scene. Hardly is supper finished when the whole household hastens thither. A lantern hung upon the glazed window enables us to follow what happens. This is our distraction after the bustle of the day; it is like a visit to the theatre. And in this theatre the plays are so interesting that, as soon as the lantern is lit, all of us, old and young, come to take our places in the stalls; even down to Tom, the house-dog. Indifferent to the affairs of the Scorpions, like the true philosopher that he is, Tom lies at our feet and sleeps, but only with one eye, the other being always open upon his friends, the children.

Close to the glass panes, in the region discreetly lit by the lantern, a numerous assembly has presently gathered together. Some come from a distance; they solemnly emerge from the shadow, and then, suddenly, with a swift easy rush like a slide, they join the crowd in the light. They investigate their surroundings, fleeing precipitately at a touch as though they had burned each other. Others, having mixed with their comrades a little, suddenly make off distractedly; they recover themselves in

the darkness and return. At moments there is a violent tumult; a confused mass of swarming legs, snapping pincers and coiling, clashing tails, threatening or caressing, one does not quite know which. All take part in the scuffle, large and small; you would think it a deadly battle, a general massacre, but it is only a crazy game, like a scrimmage of kittens. Presently the group disperses; they retire for a little in all directions, without any sign of a wound, without a sprain.[1]

What do you think of the saraband of these horrible creatures, so full of mirth and playfulness? Certainly it has its fascinating side; but it is not equal to the scenes of betrothal and espousal.

Now the fugitives are once more assembled beneath the lantern. They pass to and fro, coming and going, often meeting face to face. The one in the greatest hurry walks over the other's back, who allows him to do so without other protest than a movement of the rump. The time has not come for squabbling; at the most those encountering exchange the equivalent of a punch on the head: that is, a thump of the tail.

We have something better here than entangled legs and brandished tails; these are pauses of great originality. Face to face, the claws drawn back,

[1] *Souvenirs,* IX., pp. 94-97, 231, 299-310. *The Life and Love of the Insect,* chaps. xvii., xviii.

two combatants proceed to stand on their heads: that is, supporting themselves only on the fore part of the body, they raise the hinder part in the air, so high that the thorax reveals the eight white breathing-pockets. The tails, stretched out in a straight line and raised into a vertical position, rub together, slipping over each other, while their extremities are bent into a hook and gently, over and over again, knot themselves together and release themselves. Suddenly the amicable pyramid falls to the ground and each scuttles off without further ceremony.

What did these two wrestlers intend by their original posture? Was it the grappling of two rivals? It would seem not, so pacific was the encounter. Subsequent observations tell me that these are the allurements of the betrothal. To declare his passion, the Scorpion stands on his head.[1]

This reconnaissance and these first advances are followed by a sentimental promenade.

Two Scorpions are face to face, their claws outstretched, their hands clasped. Their tails curved in graceful spirals, the couple wander with measured steps the length of the window. The male goes first, walking backwards, smoothly, en-

[1] *Souvenirs*, IX., pp. 300-301. *The Life and Love of the Insect*, chap. xvii.

countering no resistance. The female follows obediently, held by the tips of her claws, face to face with her leader.

The promenade is interrupted by halts which do not in any way modify the method of conjunction; it is resumed, now in this direction, now in that, from one end of the enclosure to the other. Nothing indicates the goal for which the strollers are making. They loiter, musing and assuredly exchanging glances. Thus in my village, on Sunday, after vespers, the young people stroll along by the hedges, two by two.

Often they turn to one side. It is always the male who decides the fresh direction to be followed. Without releasing his companion's hands he gracefully turns about, placing himself side by side with his companion. Then, for a moment, with his tail lying flat, he caresses her back. The other does not stir; she remains impassive. Sometimes the two heads touch, bending a little to right and left as if whispering into each other's ears. What are they saying? How translate into words their silent epithalamium?

Sometimes, too, their foreheads touch and the two mouths meet with tender effusiveness. To describe these caresses the word "kisses" occurs to the mind. One dare not employ it; for here is neither head, face, lips, or cheeks. Truncated as though by a stroke of the shears, the animal has not even a snout. Where we should look for a face, are two hideous jaws like a wall. And this for the Scorpion is the height of beauty! With

his fore legs, more delicate and agile than the rest, he softly pats the dreadful mask, to his eyes an exquisite face; voluptuously he nibbles at it, tickles with his jaws the face touching his, as hideous as his own. His tenderness and naïveté are superb. The dove, they say, invented the kiss. I know of a precursor: the Scorpion. . . .

For a good hour I watch, unwearied, these interminable wanderings to and fro. Part of the household lends me the assistance of its eyes. Despite the lateness of the hour, our combined attention allows nothing essential to escape us. We admire the curious yoking of the couples which our presence does not disturb in the least. We find it almost graceful, and the expression is not exaggerated. Semi-translucid and gleaming in the light of the lantern, the happy pair seem carved from a block of yellow amber. With arms outstretched and tails coiled into graceful spirals, they gently stroll about with measured paces.

At last, about ten o'clock, a separation takes place. The male has come across a potsherd whose shelter appears to him suitable. He releases one of his consort's hands, but only one, and still holding her firmly by the other he scratches with his legs and sweeps with his tail. A grotto opens. He enters it, and gradually, without violence, he draws the patient female into it. Presently both have disappeared. A little bank of sand closes their dwelling. The couple are at home.

To disturb them would be a blunder; I should

intervene too soon, at an inopportune moment, if I attempted to see at once what is happening down there. The preliminaries will possibly last the greater part of the night, and long vigils are beginning to tell upon my eighty years. My legs give way and sand trickles into my eyes. Let us go to bed.

All night I dream of Scorpions. They run under my blankets, they pass over my face, and I am not greatly disturbed thereby, such remarkable things do I see in my imagination![1]

Incidentally we may remark that it is not only in his imagination that insects frequent his bed-clothes and caress his bare skin. Here we come to an episode of the entomologist's private life.

When wearing his last costume, the Pine Processionary caterpillar is very disagreeable to handle, or even to observe at close quarters. I happened, quite unexpectedly, to learn this more thoroughly than I wished.

After unsuspectingly passing a whole morning with my insects, stooping over them, magnifying-glass in hand, to examine the working of their slits, I found my forehead and eyelids suffering with redness for twenty-four hours, and afflicted with an itching even more painful and persistent than that

[1] *Souvenirs*, IX., pp. 302-312. *The Life and Love of the Insect*, chap. xxii.

produced by the sting of a nettle. On seeing me come down to dinner in this sad plight, with my eyes reddened and swollen and my face unrecognisable, the family anxiously inquired what had happened to me, and were not reassured until I told them of my mishap.

I unhesitatingly attribute my painful experience to the red hairs ground to powder and collected into flakes. My breath sought them out in the open pockets and carried them to my face, which was very near. The unthinking intervention of my hands, which now and again sought to ease the discomfort, merely aggravated the ill by spreading the irritating dust.[1]

What would to another have been merely an annoying accident without other bearing than a commonplace lesson of prudence, became for him the starting-point of a whole series of instructive experiments.

Whatever his retirement has cost him, a man so passionately devoted to animals must bless the solitude of his village which enables him to pass all his time in observing and describing them. He congratulates himself, indeed, upon his premature retirement, which is dooming him to obscurity and impecuniosity for the rest of his days, at the same time

[1] *Souvenirs*, VI., pp. 377-378. *The Life of the Caterpillar*, chap. v., "The Moth."

allowing him wholly to give himself up to entomology.

Ah, beloved village, so poor, so rustic, what a happy inspiration was mine when I came to you to demand of you a hermit's retreat, where I could live in company with my dear insects and thus trace in a worthy manner a few chapters of their marvellous history![1]

[1] *Souvenirs*, III., p. 14.

CHAPTER XVII

THE COLLABORATORS

"M. FABRE'S life-story is one of the finest that could be related," said M. Laffite lately, in a leading article in *La Nature*. "It is simple. It is the humble and tragic story of a persistent struggle between two irreducible adversaries, on the one hand the most precarious conditions of the struggle for life, and on the other the power of a vocation, as though riveted to his being, which urged him despite everything to observation, study, and an understanding of the world of living creatures, and in particular of the insects." [1]

Such, indeed, is one of the most striking aspects of the great naturalist's life, and that under which it appears more especially in its early stages. But there is another aspect, perhaps even more remarkable, under which it was to reveal itself more particularly in later years. Considering the first of these

[1] 26th March 1910.

aspects, we shudder at the violence of the battles fought for the triumph of his ideal and his vocation; considering the second, we are filled with delighted admiration by the fascinating and triumphant results achieved by this ideal; I mean the marvels and allurements of entomology.

Under the clear gaze of this observer of genius, as at the bidding of a magic ring, a whole world of tiny creatures rises and moves before him, recalling the world of Lilliput, but still more marvellous, and more fertile in dramatic incident of every kind. "No romance of Jules Verne's or Fenimore Cooper's is more exciting." [1]

Fabre is the first of writers to be conquered by the spectacle that unfolds itself before his eyes; conquered in the whole of his activities, in his imagination and sensibility, and in his style, which quite naturally adorns itself with the colours of his insects; and no less naturally quivers and vibrates with their emotions. Others before him had studied the life of insects. "But no one had put so much persevering perspicacity into his study of them; no one above all had spoken with such enthusiasm, with such poetical feeling, of the wonders of which it is

[1] E. Perrier, *Revue hebdomadaire,* October 22, 1910.

full; no one had identified himself, as did Fabre, with the creatures that he studied.

"The insect is no longer, for him, the lowest of creatures, disdained by all; you would think it was a person, a friend, whose thoughts and emotions he divines, in whose joys and sorrows he shares; he speaks to it, reassures it, consoles it, advises it by voice and gesture, and even helps it in its labours when it seems at the end of its resources. Of all these shared feelings, these anxieties experienced in common, he retains a vivid memory, and his ready, sympathetic, vibrant pen runs across the page, halts, starts off again, scratching the paper, uttering cries of joy, or weeping, as it records the drama all of whose vicissitudes he has experienced."

Not in vain are the insects "the children of summer," and not in vain has he contemplated them "in the blessed season" under the brilliance and the ardours of noon. "All the sunshine of Provence is reflected by his picturesque style; and it seems as though a miraculous fairyland is unfolded before us, whose scenery is all of the mother-of-pearl, the gold, and the rainbow hues that Nature has spread upon the aerial oars of the Dragon-flies and the Bees, on the cuirass of the Scarabæi, on the blazing fans that the

Butterflies wave voluptuously, intoxicating themselves with the nectar of the flowers.

"Nothing in all this is far-fetched or deliberate. Henri Fabre has never plumed himself on his literary achievements; it is his real self, it is his whole mind that expresses itself in his *Souvenirs;* the mind of an ardent and passionately interested but precise observer, a mind open to every emotion," [1] and sensitive to all the impressions received from all these little lives, that have no secrets from him. This mind and these lives, intimately and sincerely mingled, and ingenuously reflected in the pages of his books; this is the secret of the most vital, the most picturesque, and the least conventional style that can be imagined.

Thus, it is that, aiding his imagination and his sensibility, the insects themselves became the entomologist's foremost collaborators. Was not this the most graceful way of recognising the services which he has rendered them, and of repaying the love which he has always borne them?

If they have received much, they have also given much; so much, that we may well ask who can have gained the most—they or the entomologist—by this exchange of bene-

[1] E. Perrier, *loc cit.*

fits? Were one of their number aware of the merits of their partnership he would doubtless consider that they have contributed to his fame no less than he has magnified theirs.

Conquered himself without reservation by the unexpected beauties of entomology, Fabre was fortunate enough to see a like fascination exerting itself, as a result of his teaching and example, in those about him, his neighbours and his friends, just as it now exerts itself through his books upon all his readers.

When we attempted discreetly to lift the veil of his first retirement from Orange, which seemed to us peculiarly characteristic of his private life, we had occasion to note the eminently domestic nature of his life and work, and the assiduous collaboration in the common task of the first-born of his children. We have seen Antonia, Claire, Jules and Emile [1] rivalling one another in their eagerness to assist in their father's observations, and this charming devotion outlived the youthful ardour of the early springtide of life.

Sometimes, too, the children anticipate

[1] *Souvenirs*, I., pp. 304-306, 320; II., pp. 112, 130, 131; III., p. 16; IV., pp. 142, 167, 183; VI., p. 15; VIII., p. 159.

their father's entomological desires. For example, his son Emile sends him from the neighbourhood of Marseilles a nest of resin-working Hymenoptera.[1] His daughter Claire sends him, from another part of Provence, an entomological document of such value that it "reawakened all the enthusiasm of his early years." It related to one of his favourite insects, another Hymenopteron, the Nest-building Odynerus.

It was the end of February. The weather was mild; the sun was kind. Setting out in a family party, with food for the children, apples, and a piece of a loaf in the basket, we were going to see the almond-trees in flower. When it was time for lunch we halted under the great oak-trees, when Anna, the youngest of the household, always on the look-out for small creatures with her new, six-year-old eyes, called to me, at a few paces' distance from our party. "An animal," she said, "two, three, four—and pretty ones! Come and see, papa, come and see!"[2]

This was one of the rarest discoveries: a dozen specimens of the Pearly Trox, which were making a meal off a little rabbit's down which some fox's stomach had been unable

[1] *Souvenirs,* IV., pp. 167-168, 182-183. *The Mason Wasps,* chap. viii., "The Nest-building Odynerus."

[2] *Ibid.,* VI., pp. 4, 118-119, 249, 383; VIII., p. 295; X., pp. 15, 86, 112, etc.

to exploit. "There is every sort of taste in this world, so that nothing shall be wasted!"

And not once or twice, but every moment almost, little Paul,[1] Marie Pauline,[2] and Anna enliven the narrative by their delightful appearances and their inventive activity. Little Paul above all is an auxiliary of the highest value, who deserves to be introduced to the reader as an acknowledged collaborator:

> I speak of my son Paul, a little chap of seven. My assiduous companion on my hunting expeditions, he knows better than any one of his age the secrets of the Cicada, the Locust, the Cricket, and especially the Dung-beetle, his great delight. Twenty paces away, his sharp eyes will distinguish the real mound that marks a burrow from casual heaps of earth; his delicate ears catch the Grasshopper's faint stridulation, which to me remains silent. He lends me his sight and hearing; and I, in exchange, present him with ideas, which he receives attentively, raising wide, blue, questioning eyes to mine.

Little Paul's exploits are innumerable, and nothing deters him. "He will gather hand-

[1] *Souvenirs,* I., p. 246; VI., p. 249; VIII., p. 3; X., p. 11, etc.

[2] *Ibid.*, VII., p. 29; VIII., pp. 5, 272; X., pp. 111, 254, etc. For Lucie, his grand-daughter, aged six, see II., p. 149.

fuls of the most repulsive caterpillars with no more apprehension than if he were picking a bunch of violets." Several times a day he scrupulously inspects the under sides of the dead moles placed for purposes of observation in the *harmas,* takes note of the labours of the Necrophori, and, without more ado, seizes upon the fugitives and returns them to their workshop. He alone of the household ventures to lend his assistance in such a disgusting task.

Little Paul is always equal to the circumstances. If he is cool he is no less enthusiastic, but it is a well-directed enthusiasm. For proof I need only cite the night of the Great Peacock, the honour of which was due almost wholly to little Paul.

It was a "memorable night," the night of the Great Peacock.

Who does not know the magnificent Moth, the largest in Europe, clad in maroon velvet with a necktie of white fur? The wings, with their sprinkling of grey and brown, crossed by a faint zigzag and edged with smoky white, have in the centre a round patch, a great eye with a black pupil and a variegated iris containing successive black, white, chestnut, and purple arcs.

Well, on the morning of the 6th of May, a female emerges from her cocoon in my presence, on

the table of my insect laboratory. I forthwith cloister her, still damp with the humours of the hatching, under a wire-gauze bell-jar. For the rest, I cherish no particular plans. I incarcerate her from mere habit, the habit of the observer always on the look-out for what may happen.

It was a lucky thought. At nine o'clock in the evening, just as the household is going to bed, there is a great stir in the room next to mine. Little Paul, half-undressed, is rushing about, jumping and stamping, knocking the chairs over like a mad thing. I hear him call me:

"Come quick!" he screams. "Come and see these Moths, big as birds! The room is full of them!"

I hurry in. There is enough to justify the child's enthusiastic and hyperbolical exclamations, an invasion as yet unprecedented in our house, a raid of giant Moths. Four are already caught and lodged in a bird-cage. Others, more numerous, are fluttering on the ceiling.

At this sight, the prisoner of the morning is recalled to my mind.

"Put on your things, laddie," I say to my son. "Leave your cage and come with me. We shall see something interesting."

We run downstairs to go to my study, which occupies the right wing of the house. In the kitchen I find the servant, who is also bewildered by what is happening and stands flicking her apron at great Moths whom she took at first for Bats.

The Great Peacock, it would seem, has taken

possession of pretty well every part of the house. What will it be around my prisoner, the cause of this incursion? Luckily, one of the two windows of the study had been left open. The approach is not blocked.

We enter the room, candle in hand. What we see is unforgettable. With a soft flick-flack the great Moths fly around the bell-jar, alight, set off again, come back, fly up to the ceiling and down. They rush at the candle, putting it out with a stroke of their wings; they descend on our shoulders, clinging to our clothes, grazing our faces. The scene suggests a wizard's cave, with its whirl of Bats. Little Paul holds my hand tighter than usual, to keep up his courage.

How many of them are there? About a score. Add to these the number that have strayed into the kitchen, the nursery, and the other rooms of the house; and the total of those who have arrived from the outside cannot fall far short of forty. As I said, it was a memorable evening, this Great Peacock evening. Coming from every direction and apprised I know not how, here are forty lovers eager to pay their respects to the marriageable bride born that morning amid the mysteries of my study.[1]

How could the news of the joyful event have reached them? No doubt by some mys-

[1] *Souvenirs*, VII., pp. 339-41. *The Life of the Caterpillar*, chap. xi., "The Great Peacock"; also *Social Life in the Insect World*, chap. xiv.

terious wireless telegraphy which has not yet found its Branly.

A few days later the miracle was repeated before the wondering eyes of the naturalist and his faithful acolyte, by another moth, which in this case celebrated its nuptials by daylight in the bright sunshine.

Let us hasten to say that the entomological zeal of this little moth-hunter did not fade with the feverish activity of the very young. As we see him in 1897, at the age of seven, so we find him at fifteen in 1906. The importance and value of his services had only increased as his capacities increased, and as the vigour and muscular activity of his beloved father diminished. He lent him his limbs for excursions by day and by night.

What will he not do to please his father? As eagerly as he lends him his legs on his long expeditions, he lends him his arms for all the tasks that are forbidden his eighty years: for example, the excavation of the deep galleries of certain burrowing insects.

The rest of the family, including the mother, being no less zealous, commonly accompanies us. Their eyes are none too many when the trench grows deep and the tiny details uncovered by the spade have to be scanned from a distance. What one does not see, another does. "Huber, having

grown blind, studied bees through the meditation of a sharp-sighted and devoted servant. I am better off than the great Swiss naturalist. My own sight, which is still pretty good, although a good deal fatigued, is assisted by the sharp-sighted eyes of my whole family. If I am still able to pursue my investigations I owe it to them; let me thank them duly!" [1]

This man must be something of a sorcerer, and his science must have something of magic in it, thus to mobilise his wife and children around the burrow of an insect; to keep them there a whole morning without recking of the heat and fatigue, and to bring them to their hands and knees before the apparition of a Dung-beetle.

This magic power of entomology, or let us rather say this demoniacal proselytism of the entomologist in favour of his beloved science, was exerted not only upon his family, but upon all persons liable to be subjected to his influence or capable of serving his projects.

It was upon children that he fixed his choice in the first place. Fabre had always made children so welcome, had always treated them so graciously, that he was assured beforehand of their enthusiastic support of

[1] *Souvenirs*, x., p. 111.

his proposals, even if he was not forestalled by their offers of service. Allured by the coin or the slice of bread and jam, or the sugar-plums, and also, we may say, stimulated by the evident good faith of the master, and the delightful drollery of his enterprises, all the juvenile unemployed of Sérignan vie with one another as purveyors to the entomological laboratory. They zealously keep the larder of the Scarabæi supplied, without neglecting that of the Sexton-beetles and *tutti quanti*. Thanks to them, not a creature in the entomological laboratory goes hungry. The most difficult to provide for have always a well-spread table, although this is not always easy to ensure. One has to allow for the thoughtlessness of children and the hazards of the chase.

But in spite of their heedlessness, and because of their very ingenuousness, there are connections in which the child is an incomparable helper, difficult or even impossible to replace. This Fabre was often to prove.

To continue an investigation into the olfactory faculties of insects a moth is required which is rather rare and difficult to capture. Can he obtain this moth?

Yes, I shall find him; indeed I have him already. A little chap of seven, with a wide-awake

face that doesn't get washed every day, bare feet and a pair of tattered breeches held up by a bit of string, a boy who comes regularly to supply the house with turnips and tomatoes, arrives one morning carrying his basket of vegetables. After the few sous due to his mother for the greens have been counted one by one into his hand, he produces from his pocket something which he found the day before, beside a hedge, while picking grass for the rabbits:

"And what about this?" he asks, holding the thing out to me. "What about this? Will you have it?"

"Yes, certainly, I'll have it. Try and find me some more, as many as you can, and I'll promise you plenty of rides on the roundabout on Sunday. Meanwhile, my lad, here's a penny for you. Don't make a mistake when you give in your accounts; put it somewhere where you won't mix it up with the turnip-money." [1]

The precious discovery was none other than the cocoon from which would presently emerge the desired Moth, vainly sought after during twenty years' residence in Sérignan.

Of all children Fabre must have had a weakness for the most rustic specimens; for those who, by virtue of their situation and by inclination, lived more nearly in contact

[1] *Souvenirs*, VII, 360.

with Nature and the animal creation. If they are ever so little wide-awake, they are at once, for him, friends whose society he seeks and helpers whose assistance he appreciates. Such is the "young shepherd, a friend of the household," who is without a peer in catching the pill-rolling beetles,[1] so greatly does he excel in profiting by the truly exceptional advantages which the pastoral calling offers from this point of view.

In such company insect-hunting is so engaging and profitable that our naturalist decides to accompany him. Among these memorable mornings there is one which deserves particular mention, for it was truly a historic occasion:

The young shepherd who had been told in his spare time to watch the doings of the Sacred Beetle came to me in high spirits, one Sunday in the latter part of June, to say that he thought the time had come to begin our investigations. He had detected the insect issuing from the ground, had dug at the spot where it made its appearance, and had found, at no great depth, the queer thing which he was bringing me.

Queer it was, and calculated to upset the little that I thought I knew. In shape it was exactly like a tiny pear that had lost all its fresh colour

[1] *Souvenirs*, v., pp. 43-44. *The Sacred Beetle and Others*, chap. iv., "The Sacred Beetle: The Pear."

and turned brown in rotting. What could this curious object be, this pretty plaything that seemed to have come from a turner's workshop? Was it made by human hands? Was it a model of the fruit of the pear-tree intended for some children's museum? One would say so.

The shepherd was at his post by daybreak. I joined him on some slopes that had been lately cleared of their trees, where the hot summer sun, which strikes with such force on the back of one's neck, could not reach us for two or three hours. In the cool morning air, with the sheep browsing under Sultan's care, the two of us started on our search.

A Sacred Beetle's burrow is soon found: you can tell it by the fresh little mound of earth above it. With a vigorous turn of the wrist, my companion digs away with the little pocket-trowel which I have lent him. Incorrigible earthscraper that I am, I seldom set forth without this light but serviceable tool. While he digs I lie down, the better to see the arrangement and furniture of the cellar which we are unearthing, and I am all eyes. The shepherd uses the trowel as a lever and, with his other hand, holds back and pushes aside the soil.

Here we are! A cave opens out, and, in the moist warmth of the yawning vault, I see a splendid pear lying full-length upon the ground. No, I shall not soon forget this first revelation of the Scarab's maternal masterpiece. My excitement could have been no greater had I been an archæologist digging among the ancient relics of Egypt

and lighting upon the sacred insect of the dead, carved in emerald, in some Pharaonic crypt. O ineffable moment, when truth suddenly shines forth! What other joys can compare with that holy rapture! The shepherd was in the seventh heaven; he laughed in response to my smile and was happy in my gladness.[1]

There was truly good reason for the naturalist and his young friend to exult. Henri Fabre had just discovered what he had vainly been seeking for more than thirty years. He now knew the secret of the Sacred Beetle's nest; he knew that the loaf of the future nursling was not in the least like that which the insect rolls along the ground for its own use. He was now in a position to correct the error of centuries which he himself had accepted on the word of the masters. And thanks to whom? Thanks to a shepherd barely "brightened by a little reading" who had acted as his assistant. The poet was indeed right who said:

"On a souvent besoin d'un plus petit que soi."
(Of those less than ourselves we oft have need.)

So much the worse for the proud who

[1] *Souvenirs*, v., pp. 27-29. *The Sacred Beetle and Others*, chap. i., "The Sacred Beetle."

refuse to realise this! Fabre was not of their number; and more than once it was greatly to his advantage that he was not.

In the choice of his collaborators, then, Fabre addressed himself by preference to children, for he loved their perspicacity, and above all "the naïve curiosity so like his own."

But he would also solicit the help of the adult members of his entourage, if by their situation, their character, their good nature, or their mental temper he judged them capable of understanding him or, at all events, of giving him information and assisting him in his labours.

The gardener, the butcher, the farmers, the house-wives, the schoolmasters, the carpenter, the truffle-hunter, and I know not whom besides, were all in turn called upon to lend a hand, which they did with the best grace in the world, each according to his means and his speciality.

It is amusing to see the worthy villagers of Sérignan wondering at the naturalist's questions, and ostensibly flattering themselves that they know more than he does of worm-eaten vegetables. On the other hand, they often consult him, thereby making amends and affording a practical recog-

nition of "his knowledge concerning plants and little creatures."

A late frost came during the night, withering the leaf-buds of the mulberry-trees just as the first leaves were unfolding.

On the following day there was a great commotion in the neighbouring farm-houses; the silkworms were hatched, and suddenly there was no food for them. They must wait until the sun repaired the disaster. But what were they to do to keep the famished newly-born caterpillars alive for a few days? They knew me as an expert in the matter of plants; my cross-country harvesting expeditions had won me the reputation of a medical herbalist. With the flower of the poppy I prepared an elixir which strengthened the sight; with borage I made a syrup sovereign against whooping-cough; I distilled camomile, I extracted the essence of wintergreen. In short, my botany had given me the reputation of a quack-salver. That was something, after all. . . .

The housewives came seeking me from all directions; with tears in their eyes they explained how matters stood. What could they give their grubs while they were waiting for the mulberry to leaf again? A serious affair this, well deserving of commiseration. One was counting on her litter to buy a roll of linen for her daughter who was about to get married; another confided to me her plan of buying a pig, which she would fatten for the following winter; all deplored the handful of

five-franc pieces, which, placed at the bottom of the secret hiding-place in the wardrobe, in an old stocking, would have afforded relief in difficult times. Full of their woes, they unfolded before my eyes a scrap of flannel on which the little creatures were swarming:

"Regardas, Moussu; venoun espeli, et ren per lour douna! Ah! pecaïré!"

Poor people, what a hard life is yours: honourable above all, but of all the most uncertain! You exhaust yourselves with labour, and when you are almost within sight of its reward a few hours of a cold night, which has come upon you suddenly, have destroyed the harvest. To help these afflicted women would, it seemed to me, be a very difficult task. However, I tried, guided by botany, which recommended me to offer, as a substitute for the mulberry, the plants of related families: the elm, the nettle-tree, the nettle, the pellitory. Their budding leaves, chopped small, were offered to the silkworms. Other experiments, much less logical, were tried according to individual inspiration. None of them succeeded.[1] One and all, the newly-born larvæ starved to death. My fame as a quack must have suffered somewhat from this failure. But was it really my fault? No, it was the silk-

[1] It is exceedingly curious that neither Fabre nor the silk-growers knew what every English schoolboy knows so well—that silkworms thrive upon lettuce leaves, the ordinary substitute, in England, for the mulberry-leaf. Botany, of course, would not suggest such a substitute.—B. M.

worm's, too faithful to its mulberry-leaf. . . . Larvæ that live on a vegetable diet will not by any means lend themselves to a change of food. Each has its plant or group of plants, apart from which nothing is acceptable.[1]

Science as this great naturalist understands it is amiable and by no means pedantic; full of sympathy with the humble, since he himself has never ceased to be one of them, he does not disdain to consider their least preoccupations, and to become, by turns, their master and their disciple.

[1] *Souvenirs,* III., pp. 297-299.

CHAPTER XVIII

THE COLLABORATORS: (CONTINUED)

NOT all the naturalist's experiments are dedicated to practical folk; some are reserved rather for the intellectual. Let us proceed to the facts:

To-day is Shrove Tuesday, a reminiscence of the ancient Saturnalia. I am meditating, on this occasion, a fantastic dish which would have delighted the gourmets of Rome. . . .

There will be eight of us; first of all my family, and then two friends, probably the only persons in the village before whom I could permit myself such eccentricities of diet without jocular comment upon what would be regarded as a depraved mania.

One of these is the schoolmaster. Since he permits it and does not fear the comments of the foolish, if by chance the secret of our feast should be divulged, we will call him by his name, Jullian. A man of broad views and reared upon science, his mind is open to truth of every kind.

The second, Marius Guigne, is a blind man who, a carpenter by profession, handles his plane and saw in the blackest darkness with the same

sureness of hand as that of a skilful-sighted person in broad daylight. He lost his sight in his youth, after he had known the joys of light and the wonders of colour. As a compensation for perpetual darkness he has acquired a gentle philosophy, always smiling; an ardent desire to fill, as far as possible, the gaps in his meagre primary education; a sensitiveness of hearing able to seize the subtle delicacies of music; and a fineness of touch most extraordinary in fingers calloused by the labours of the workshop. During our conversations, if he wishes to be informed as to this or that geometrical property, he holds out his widely-opened hand. This is our blackboard. With the tip of my forefinger, I trace on it the figure to be constructed; accompanying my light touches with a brief explanation. This is enough; the idea is grasped, and the saw, plane, and lathe will translate it into reality.

On Sunday afternoons, in winter especially, when three logs flaming on the hearth form a delicious contrast to the brutalities of the Mistral, they meet in my house. The three of us form the village Athenæum, the Rural Institute, where we speak of everything except hateful politics. . . . At such a meeting, the delight of my solitude, to-day's dinner was devised. The special dish consists of the *cossus,* a delicacy of great renown in ancient times.

When he had eaten a sufficient number of nations, the Roman, brutalised by excess of luxury, began to eat worms. Pliny tells us: *"Romanis in hoc luxuria esse cœpit, prægrandesque roborum*

vermes delicatiore sunt in cibo: Cossos vocant." (The Romans have reached such a degree of luxury at the table that they esteem as delicious tit-bits the great worm from the oak-tree known as Cossus.)

I do not know with what sauce the Cossus was eaten in the days of the Cæsars, the Apicius of the period having left us no information on this point. Ortolans are roasted on a spit; it would be profaning them to add the relish of complicated preparation. Let us proceed in the same manner with the Cossus, these Ortolans of entomology. Spitted in rows, they are exposed on the grill to the heat of live embers. A pinch of salt, the necessary condiment of our dish, is the only addition made to it. The roast grows golden, softly sizzling, weeps a few oily tears which catch fire on contact with the coals and burn with a white flame. It is done! Let us serve it hot.

Encouraged by my example, my family bravely attack their roast. The schoolmaster hesitates, the dupe of his imagination, which sees the great grubs of a little while ago crawling across his plate. He has taken for himself the smaller specimens, as the recollection of these disturbs him less. Less subject to imaginary dislikes, the blind man ruminates and savours them with every sign of satisfaction.

The testimony is unanimous. The roast is juicy, tender, and extremely tasty. One recognises in it a certain flavour of burnt almonds which is enhanced by a vague aroma of vanilla. In short,

the vermicular dish is found to be highly acceptable, one might even say excellent. What would it be if the refined art of the gourmets of antiquity had cooked it! . . .

If I have made this investigation it was certainly not in the hope of enriching the bill of fare. The rarity of the great grubs and the repugnance which all kinds of vermin arouses in most of us will always stand in the way of my discovery becoming a common dish. . . .

As far as I am concerned, it was still less the desire for a dainty mouthful that actuated me. My sobriety is not easily tempted. A handful of cherries pleases me better than the preparations of our kitchens. My only desire was to elucidate a point of natural history.[1]

I certainly admire this zeal for science and this absence of prejudice even in the choice of food; yet I am tempted to remark that in the matter of intrepidity, whether in respect of food or of science, there is one of Fabre's circle of acquaintances who surpassed the schoolmaster and perhaps equals Fabre himself. I am referring to Favier. Who, then, is Favier?

Favier is an old soldier. He has pitched his hut of clay and branches under the African carob-trees;

[1] *Souvenirs*, X., pp. 102-109.

he has eaten sea-urchins at Constantinople; he has shot starlings in the Crimea, during a lull in the firing. He has seen much and remembered much. In winter, when work in the fields ends at four o'clock and the evenings are long, he puts away rake, fork, and barrow, and comes and sits on the hearth-stone of the kitchen fireplace, where the billets of ilex-wood blaze merrily. He fetches out his pipe, fills it methodically with a moistened thumb and smokes it solemnly. He has been thinking of it for many a long hour; but he has abstained, for tobacco is expensive. The privation has doubled the charm; and not one of the puffs recurring at regular intervals is wasted.

Meanwhile, we start talking. Favier is, in his fashion, one of those bards of old who were given the best seat at the hearth, for the sake of their tales; only my story-teller was formed in the barrack-room. No matter: the whole household, large and small, listen to him with interest; though his speech is full of vivid images, it is always decent. It would be a great disappointment to us if he did not come, when his work was done, to take his ease in the chimney-corner.

What does he talk about to make him so popular? He tells us what he saw of the *coup d'Etat* to which we owe the hated Empire; he talks of the brandy served out and of the firing into the mob. He—so he assures me—always aimed at the wall; and I accept his word for it, so distressed does he appear to me and so ashamed of having taken a hand, however innocent, in that felon's game.

He tells us of his watches in the trenches before Sebastopol; he speaks of his sudden terror when, at night, all alone on outpost duty, squatting in the snow, he saw fall beside him what he calls a flower-pot. It blazed and flared and shone and lit up everything around. The infernal machine threatened to burst at every second; and our man gave himself up for lost. But nothing happened: the flower-pot went out quietly. It was a star-shell, an illuminating contrivance fired to reconnoitre the assailant's outworks in the dark.

The tragedy of the battle-field is followed by the comedy of the barracks. He lets us into the mysteries of the stew-pan, the secrets of the mess, the humorous hardships of the cells. And, as his stock of anecdotes, seasoned with racy expressions, is inexhaustible, the supper hour arrives before any of us has had time to remark how long the evening is.

Favier first attracted my notice by a master-stroke. One of my friends had sent me from Marseilles a pair of enormous Crabs, the Maia, the Sea-spider or Spider-crab of the fishermen. I was unpacking the captives when the workmen returned from their dinner: painters, stone-masons, plasterers engaged in repairing the house which had been empty so long. At the sight of those strange animals, studded with spikes all over the carapace and perched on long legs that give them a certain resemblance to a monstrous Spider, the onlookers gave a cry of surprise, almost of alarm. Favier, for his part, remained unmoved; and, as he skil-

fully seized the terrible Spider struggling to get away, he said:

"I know that thing; I've eaten it at Vasna. It's first-rate."

And he looked round at the bystanders with an air of humorous mockery which was meant to convey:

"You've never been out of your hole, you people."

Favier knows many things; and he knows them more particularly through having eaten them. He knows the virtues of a Badger's back, the toothsome qualities of the leg of a Fox; he is an expert as to the best part of that Eel of the bushes, the Snake; he has browned in oil the Eyed Lizard, the ill-famed *Rassade* of the South; he has thought out the recipe of a fry of Locusts. I am astounded at the impossible stews which he has concocted during his cosmopolitan career.

I am no less surprised at his penetrating eye and his memory for things. I have only to describe some plant, which to him is but a nameless weed, devoid of the least interest; and, if it grows in our woods, I feel pretty sure that he will bring it to me and tell me the spot where I can pick it for myself. The botany of the infinitesimal even does not foil his perspicacity.

But, above all, he excels in ridding me of the troublesome folk whom I meet upon my rambles. The peasant is naturally curious, as fond of asking questions as a child; but his curiosity is flavoured with a spice of malice and in all his questions there

is an undercurrent of chaff. What he fails to understand he turns into ridicule. And what can be more ludicrous than a gentleman looking through a glass at a Fly captured with a gauze net, or a bit of rotten wood picked up from the ground? Favier cuts short the bantering catechism with a word.[1]

Favier has other qualities: he does not hesitate in the face of difficulties, and it is a point of honour with him to acquit himself manfully, however arduous the task.

Favier is not content with faithfully executing his master's orders. Like all intelligent and devoted servants, he divines and anticipates his desires. He has happy ideas of initiative.

On the 14th of April 1880, Favier was clearing away a heap of mould resulting from the waste weeds and leaves heaped up in a corner against the enclosing wall. . . . In the midst of his work with spade and wheelbarrow, he suddenly called me:

"A find, sir, a splendid find! Come and look!"

I hurried up. There, indeed, was a splendid discovery, and of a kind to fill me with delight, reawakening all my old memories of the Bois des Issarts.[2]

[1] *Souvenirs*, II., pp. 1 to 19.
[2] *Ibid.*, p. 104.

There swarmed a whole population of Scarabæi, in the form of larvæ, nymphs, and adult insects. There, too, were crowds of Rose-beetles (Cetoniæ), all stages being represented. There, too, were great numbers of Scoliæ, the Two-striped Scoliæ having recently emerged from their cocoons, which still had beside them the skins of the game served to the larvæ; and there, before the naturalist's eyes, was the solution of the problem of the Scolia's food, which "his painful researches in the Bois des Issarts had not enabled him to solve."[1] Less than this had been needed for Favier to merit mention in the order of the day!

At the beginning of this chapter should we not have placed the insects themselves at the head of Fabre's collaborators in his researches? When the insect takes a hand, Favier himself is out of the running.

In the meantime we have no intention of belittling Favier, or of retracting the praise which has been lavished upon him. Despite his inevitable deficiencies, and sometimes even because of them, Fabre owes him much. He owes him important manual services; he owes him curious data and inestimable discoveries; lastly, he owes him hitherto unknown opin-

[1] *Souvenirs*, III., pp. 12-14.

ions relating to evolution, for Favier is an evolutionist, and a highly original one.

For him the bat is a rat that has grown wings; the cuckoo is a sparrow-hawk that has retired from business; the slug, a snail which, through advancing age, has lost its shell; the night-jar, the *etraoucho-grepaou,* as he calls it, is an old toad which, having developed a passion for milk, has grown feathers in order to enter the folds and milk the goats. It would be impossible to get these fantastic ideas out of his head. Favier is, as will be seen, an evolutionist after his fashion, and a daring evolutionist. Nothing gives him pause in tracing the descent of animals. He has a reply for everything: this comes from that. If you ask why, he replies: "See how like they are!"

Shall we reproach him for these insanities when we hear scientists acclaiming the pithecanthropos as the precursor of man, led astray as they are by the formation of the monkey? Shall we reject the metamorphoses of the *chavucho-grapaou* when there are men who will seriously tell us that in the present condition of science it is absolutely proved that man is descended from some vaguely sketched monkey? Of the two transformations Favier's seems to me the more admissible. A painter, a friend of mine, the brother of the great musician, Félicien David, imparted to me one day his reflections concerning the human structure. "*Vé, moun bel ami,*" he said, "*vé:* l'homé a lou dintré d'un por et

lou *déforo d'uno mounino"* (Man has the inside of a pig and the outside of a monkey). I recommend the painter's jest to those who wish to derive man from the wild boar, when the monkey is out of fashion. According to David the descent is confirmed by internal resemblances: *"L'homé a lou dintré d'un por."*

And, therefore, the naturalist proceeds to make some wise reflections which we owe in the first place to Favier:

Let us avoid generalisations that are not founded upon sufficiently numerous and solid foundations. Where these foundations are lacking the child is the great generaliser.

For him the feathered race means just the bird, and the reptile family the snake, without other differences than those of magnitude. Ignorant of everything, he generalises to the utmost, simplifying in his inability to see the complex. Later on he will learn that the Sparrow is not the Bullfinch, that the Linnet is not the Greenfinch; he will particularise, and he will do so more and more daily as his faculty of observation is more widely exercised. At first he saw nothing but resemblances, now he sees differences, but not yet so clearly as to avoid incongruous comparisons and zoological solecisms like those which my gardener utters.[1]

[1] *Souvenirs*, IV., pp. 59-60.

This chapter was to have taken the form of a letter addressed to Charles Darwin, the illustrious naturalist who now lies buried beside Newton in Westminster Abbey. It was my task to report to him the result of some experiments which he had suggested to me in the course of our correspondence: a very pleasant task, for, though facts, as I see them, disincline me to accept his theories, I have none the less the deepest veneration for his noble character and his scientific honesty. I was drafting my letter when the sad news reached me: Darwin was dead:[1] after searching the mighty question of origins, he was now grappling with the last and darkest problem of the hereafter.[2]

This is what we need at the head of the seventh chapter of the second volume of the *Souvenirs*. Especially coming after what has gone before them, these few lines shed a more brilliant light upon Fabre's secret attitude toward those very thinkers whose ideas he opposes most keenly than could any number of lectures. We have here the practical exemplification of that beautiful profession of faith inspired by Saint Augustine, which he has recorded elsewhere: "I wage war boldly upon those ideas that I believe untrue:

[1] Darwin died at Down, in Kent, on the 19th of April, 1882.—A. T. DE M.

[2] *Souvenirs*, II., p. 99.

but God preserve me from ever doing so upon those who maintain them." [1]

In his constant skirmishes against the theory of evolution, even in the set battles which he occasionally fights, whenever he writes Charles Darwin's name he mentions it with evident accents of respect and sympathy, gladly referring to him as "the master," "the illustrious master," "the venerated master."

On his part the English scientist does full justice to the French scientist's incomparable mastery in the study of insects. We have often mentioned the title of "inimitable observer" which he gives him in his work on the *Origin of Species*. In a letter dated the 16th of April 1881, he wrote to Mr. Romanes, who was preparing a book on *Animal Intelligence:* "I do not know whether you

[1] *Souvenirs,* II., p. 160. He makes this declaration in respect of an error which he had incorrectly attributed to Erasmus Darwin, the grandfather of the famous Charles Darwin, on the faith of an unfaithful translation due to the entomologist Lacordaire. The mistake, which is really Lacordaire's, not Erasmus Darwin's, consisted in confusing the Sphex with a common Wasp. Charles Darwin, having informed Fabre that his grandfather had said "*a* wasp," the French naturalist immediately inserted this correction in a note, in the second volume of the *Souvenirs,* which I had not yet come across when I cited the passage in question. I can therefore say with M. Fabre: "May this note amend, within the proper limits, the assertions which I made in all good faith."

would care to discuss in your book some of the more complicated and marvellous instincts. It is an ungrateful task . . . But if you discuss some of these instincts, it seems to me that you could not take a more interesting point than that of the animals that paralyse their prey, as Fabre has described in his astonishing memoir in the *Annales des sciences naturelles,* a memoir which he has since amplified in his admirable *Souvenirs.*"

When he wrote this Darwin was acquainted only with the first volume of the *Souvenirs.*[1] What would he have said if he could have enjoyed the whole of the learned entomologist's masterly work?

In reading this first volume, the attention of the English naturalist had been especially struck by the operations of the Hunting Wasps, which were peculiarly upsetting to his theories.

Darwin was visibly preoccupied by the problem of instinct as propounded by the irrefutable observations of the French entomologist, but he did not despair of finding a solution in conformity with his system. Fabre, on his side, believed that his position

[1] Darwin died in 1882, and the second volume of the *Souvenirs* appeared in 1883.

was inexpugnable, and was not without hope of converting Darwin by what appeared to him to be the evidence of the facts.

Nowhere does the theory of evolution come full tilt against so immovable an obstacle. Darwin, a true judge, did not fail to realise this. He greatly dreaded the problem of the instincts. My first results in particular had left him anxious. If he had known the tactics of the Hairy Ammophila, the Mantis-hunting Tachytus, the Philanthus apivorus, the Calicurgus, and other predatory insects which have since been investigated, his anxiety, I believe, would have become a frank avowal of his inability to get instinct to enter the world of his formula. Alas! the philosopher of Down left us when the discussion was only just beginning, with experiment to fall back upon, a method superior to all arguments. The little that I had published at that period left him still some hope of explanation. In his eyes instinct is always an acquired habit.

We have already mentioned Fabre's relations with Moquin-Tandon, Dufour, Pasteur, and Duruy. Other names might be added to complete the list of his friends, or the correspondents whom he succeeded in interesting in entomology and admitting more or less to participation in his researches.[1] We

[1] *Souvenirs*, I., pp. 188, 189; II., pp. 103; VI., pp. 25, 166, 203; VII., pp. 8, 9, 57, 161, etc.

will confine ourselves here to mentioning a worthy Brother of the Christian Colleges who afforded him one of the great pleasures of his life by enabling him to satisfy, at a small expense, without emptying his purse or too greatly curtailing his patient observations, one of the wilder longings of his youth, from which he was not always exempted by age:

To travel the world, by land and sea, from pole to pole; to cross-question life, under every clime, in the infinite variety of its manifestations: that surely would be glorious luck for him that has eyes to see; and it formed the radiant dream of my young years, at the time when *Robinson Crusoe* was my delight. These rosy illusions, rich in voyages, were soon succeeded by dull, stay-at-home reality. The jungles of India, the virgin forests of Brazil, the towering crests of the Andes, beloved by the condor, were reduced, as a field for exploration, to a patch of pebbles enclosed within four walls.

Heaven forfend that I should complain! The gathering of ideas does not necessarily imply distant expeditions. Jean-Jacques Rousseau herborised with the bunch of chick-weed whereon he fed his canary; Bernardin de Saint-Pierre discovered a world on a strawberry plant that grew by accident in a corner of his window; Xavier de Maistre, using an armchair by way of post-chaise, made one of the most famous of journeys around his room.

This manner of seeing country is within my means, always excepting the post-chaise, which is too difficult to drive through the bushes. I go the circuit of my enclosure over and over again, a hundred times, by short stages; I stop here and I stop there; patiently I put questions and, at long intervals, I receive some scrap of a reply.

The smallest insect village has become familiar to me: I know each fruit-branch where the Praying Mantis perches; each bush where the pale Italian Cricket strums amid the calmness of the summer nights; each downy plant scraped by the Anthidium, that maker of cotton bags; each cluster of lilac worked by the Megachile, the Leaf-cutter.

If cruising among the nooks and corners of the garden do not suffice, a longer voyage shows ample profit. I double the cape of the neighbouring hedges and, at a few hundred yards, enter into relations with the Sacred Beetle, the Capricorn, the Geotrupes, the Copris, the Decticus, the Cricket, the Green Grasshopper, in short with a host of tribes the telling of whose story would exhaust a lifetime. Certainly, I have enough and even too much to do with my near neighbours, without leaving home to rove in distant lands.

Nevertheless, it were well to compare what happens under our eyes with that which happens elsewhere; it were excellent to see how, in the same guild of workers, the fundamental instinct varies with climatic conditions.

Then my longing to travel returns, vainer to-day than ever, unless one could find a seat on that car-

pet of which we read in the *Arabian Nights,* the famous carpet whereon one had but to sit to be carried whithersoever he pleased. O marvellous conveyance, far preferable to Xavier de Maistre's post-chaise! If I could only find just a little corner on it, with a return-ticket!

I do find it. I owe this unexpected good fortune to a Brother of the Christian Schools, to Brother Judulien, of the La Salle College at Buenos Aires. His modesty would be offended by the praises which his debtor owes him. Let us simply say that, acting on my instructions, his eyes take the place of mine. He seeks, finds, observes, sends me his notes and his discoveries. I observe, seek and find with him, by correspondence.

It is done; thanks to this first-rate collaborator, I have my seat on the magic carpet. Behold me in the pampas of the Argentine Republic, eager to draw a parallel between the industry of the Sérignan Dung-beetles and that of their rivals in the western hemisphere.[1]

To close the history of the Sérignan hermit by opening such remote perspectives is not so inconsistent as it may seem, for, after having obstinately imprisoned himself within the narrow horizon of his village all his life, the Provençal recluse was beginning to be

[1] *Souvenirs,* VI., p. 70. *The Glow-Worm and Other Beetles,* chap. ix., "Dung-beetles of the Pampas." There is also mention of Brother Judulien in a long note in vol. v., p. 131; *The Glow-Worm and Other Beetles,* p. 238.

drawn out of it by the intelligent zeal of certain friends, who forced him to make a triumphant tour of France, and we might almost say of the world.

The magic carpet on which they made him sit for this magnificent journey was, however, by no means a borrowed article. It was he himself who had provided it. It was none other than the marvellous series, so rich and so varied, of his entomological works, which had only to be known in order to ensure for the author everywhere the welcome which he deserved, a truly enthusiastic welcome, and the place which was due to him: one of the foremost places among our scientists and our writers.

CHAPTER XIX

FABRE'S WRITINGS

MY study-table, the size of a pocket-handkerchief, occupied on the right by the inkstand—a penny bottle—and on the left by the open exercise-book, gives me just the room which I need to wield the pen. I love that little piece of furniture, one of the first acquisitions of my early married life. It is easily moved where you wish: in front of the window, when the sky is cloudy; into the discreet light of a corner, when the sun is tiresome. In winter it allows you to come close to the hearth, where a log is blazing.

Poor little walnut board, I have been faithful to you for half a century and more. Ink-stained, cut and scarred with the pen-knife, you know how to lend your support to my prose as you once did to my equations. This variation in employment leaves you indifferent; your patient back extends the same welcome to my formulæ of algebra and the formulæ of thought. I cannot boast this placidity; I find that the change has not increased my peace of mind: the hunt for ideas troubles the brain even more than does the hunt for the roots of an equation.

You would never recognise me, little friend, if

you could give a glance at my grey mane. Where is the cheerful face of former days, bright with enthusiasm and hope? I have aged, I have aged. And you, what a falling off, since you came to me from the dealer's, gleaming and polished and smelling so good with your beeswax! Like your master, you have wrinkles, often my work, I admit; for how many times, in my impatience, have I not dug my pen into you, when, after its dip in the muddy inkpot, the nib refused to write decently!

One of your corners is broken off; the boards are beginning to come loose. Inside you, I hear, from time to time, the plane of the Death-watch, who despoils old furniture. From year to year new galleries are excavated, endangering your solidity. The old ones show on the outside in the shape of tiny round holes. A stranger has seized upon the latter, excellent quarters, obtained without trouble. I see the impudent intruder run nimbly under my elbow and penetrate forthwith into the tunnel abandoned by the Death-watch. She is after game, this slender huntress, clad in black, busy collecting Wood-lice for her grubs. A whole nation is devouring you, you old table; I am writing on a swarm of insects! No support could be more appropriate to my entomological notes.

What will become of you when your master is gone? Will you be knocked down for a franc, when the family come to apportion my poor spoils? Will you be turned into a stand for the pitcher beside the kitchen-sink? Will you be the plank on which the cabbages are shredded? Or will my chil-

dren, on the contrary, agree among themselves and say:

"Let us preserve the relic. It was where he toiled so hard to teach himself and make himself capable of teaching others; it was where he so long consumed his strength to find food for us when we were little. Let us keep the sacred plank."

I dare not believe in such a future for you. You will pass into strange hands, O my old friend; you will become a bedside-table laden with bowl after bowl of linseed-tea, until, decrepit, rickety, and broken-down, you are chopped up to feed the flames for a brief moment under the simmering saucepan. You will vanish in smoke to join my labours in that other smoke, oblivion, the ultimate resting-place of our vain agitations.[1]

The little table protests to-day. It has no desire whatever to go up in smoke with the labour in which it has borne its part; it flatters itself, on the contrary, with the hope that having shared in the toil it may also have some chance of sharing the honour. Rather than this unjust sentence of death, it seems to hear a summons to life:

"Let us go back, O my table, to the days of our youth, the days of your French polish and my smiling illusions," and it stands proudly upon its legs, as though to serve as

[1] *Souvenirs*, IX., pp. 184-186. *The Life of the Fly*, chap. xiii., "Mathematical Memories: My Little Table."

a support for these pages destined to recapitulate Fabre's written work, all that work which it has helped him to compose, from the first line to the last.

Of the first literary or scientific exercises of the youthful Fabre and the first quivers of the little table under the nervous, valiant, indefatigable pen of the young Carpentras schoolmaster, we shall say nothing, unless that there was really some excuse for trembling before the audacious and strenuous toil of the beginning, and all the exercise-books stuffed with figures and formulæ, diagrams and texts which represent the solitary and strictly personal work of preparation for two bachelor's degrees, quickly followed by those of the licentiate and the doctor. It was an anatomical work, a memoir on the reproductive organs of the Myriapods, or Centipedes, that won for Fabre the degree of Doctor of Science.

Fabre's first contribution to the Press was a memoir on the Predatory Hymenoptera, published in the *Annales des sciences naturelles*. This attracted great attention among the masters of science. The Institute of France awarded him a prize for experimental physiology. Darwin, then at the height of his fame, saluted him with amazed and

rather uneasy admiration. Léon Dufour, the patriarch of entomology in those days, wrote the author a most eulogistic and encouraging letter; happy to have directed his researches toward discoveries which he himself had not suspected, the venerable scientist emphatically exhorted his young friend to continue his journey along the path that was opening before him, a path so full of promise.

Some time after this he published another entomological work which was by no means calculated to disappoint the hopes aroused by the first. It dealt with an insect related to the Cantharides, the *Sitaris humeralis,* and it contained matter no less unsuspected and no less astonishing than the first.

The impression produced was all the more profound in that the miracle of instinct was here accompanied by a physiological miracle, a phenomenon of metamorphosis wholly unknown, to describe which Fabre hit upon the very happy term hypermetamorphosis. To the ordinary series of transformations through which the insect passes in proceeding from the larval condition to that of the nymph and the perfect insect, this strange little beast adds another as a prelude to the first, so that the larva of the Sitaris passes through *four* different forms, known as the

primary larva, the *secondary larva,* the *pseudo-chrysalis,* and the *tertiary larva,* and these resemble one another so little that only the most sustained attention on the observer's part enables him to believe the testimony of his eyes.

All these revelations keenly stimulated the curiosity and emulation of the specialists, and set them "on the track of the history, hitherto mysterious, of the Cantharides and all the insects resembling them. . . . A number of naturalists, Beauregard, Riley, Valéry-Mayet, Künckel d'Herculais, Lichtenstein, and others began to study the insects more or less adapted to the preparation of blisters: the Mylabres, the Meloës, the Cantharides. Lichtenstein even carried the larvæ of the Cantharides in his watch pocket, enclosed in small glass tubes, so that he could keep them warm and observe them at any moment."

It was by reading the memoir on the peregrinations and metamorphoses of the Sitaris that M. Perrier [1] made the acquaintance of Fabre's work, of which he was to become one of the most competent judges and fervent and eloquent admirers. He referred to this essay last year in his speech at the Sérignan jubilee:

[1] E. Perrier, *Revue hebdomadaire,* October 22, 1910.

It was in 1868. I had only just left the Higher Normal College, and was a very youthful assistant naturalist at the Museum. I can still see myself on the box-seat of an omnibus, crossing the Place de la Concorde, with an open book on my knees; I was reading the history of the *Sitaris humeralis;* I was marvelling at its complicated metamorphoses and its ruses for making its way into the nest of the solitary Bee.[1]

These early essays were followed by many others, also published in the *Annales des sciences naturelles,* and were always received with the same favour by all the notable scientists of the time.

While he was soaring toward the heights, and making his way into unexplored regions, under the astounded gaze of the most eminent authorities, who saw themselves suddenly equalled and even surpassed, his scientific genius loved also to look downwards, to approach the beginners, to return, as it were, to the starting-point, in order to hold out his hand to them, and to trace out for them, through all the stages of science, the path that he had opened up for himself in the face of unheard-of difficulties.

He laboured to give them what he himself had felt the lack of almost as much as the

[1] *Revue Scientifique,* May 7, 1910.

help of masters: the assistance of luminous, living books, capable of teaching without fatigue and without tedium. His class books are, in fact, models of their kind. In them you will find no vague phraseology, but the simplest, most precise, yet most natural language; no idle excess of erudition, but the most perfect lucidity of text as of diagram; no dryness, nothing commonplace, but everywhere something picturesque, original, and full of life, giving charm and relief to all that is learned; and above all the constant care never to isolate oneself from life, to keep in touch with reality, by leading the youthful mind from the spectacles which are most familiar to it to the conceptions of science and from these to such of their applications as are most usual and most familiar.

To sum up, a rare talent for simply and clearly expounding the most difficult theories in such a way as to render them accessible to the youngest minds; a wonderful power of capturing the attention from all sides, of breaking down the water-tight partition which too often exists between the mind and the heart, between science and life, between theory and practice: such are the essential characteristics which earned Fabre the title of " the incomparable populariser."

Fabre's Writings

About 1866 and 1867, at the Normal College of Rodez, one of our professors used to read to us and teach us to admire certain little books by our as yet but little known compatriot, J. H. Fabre, who was born at Saint-Léons, so he told us, and had graduated from the Normal College of Avignon.

Such is the information recently given us by M. François Fabié, as "a detail that might perhaps give us pleasure, and which proves, in any case, that not all the inhabitants of the Rouergue, as was mistakenly said of late, were ignorant of the name, origin, and talent of J. H. Fabre." [1]

[1] Our eminent compatriot will forgive the writer for quoting the following passage from a letter of his, which so fully expresses both his admiration for our hero and his profound affection for the land of our fathers: "For the second time, on reading in the *Journal d'Aveyron* your comprehensive and loving study of the life and work of your illustrious namesake, I was agreeably surprised to see that you compared our characters and our work. This comparison is extremely flattering to me, and I thank you from the bottom of my heart. . . . It is indeed a somewhat curious thing that two Rouergats should have conceived the idea of celebrating the Animals; that both should have been led by their destiny to Provence; that both should have had the course of their lives affected by the intervention of Duruy, etc. It is true that one must not push these analogies too far. Duruy merely advanced me from the Normal College of Rodez to that of Cluny; and in so doing, alas! he uprooted me. . . . As for the Animals, what are the poetic fancies which I have dedicated to them beside the masterly essays of the man who has been called 'the Homer of the insects!'" M. Fabié does not dispute, any more than we ourselves, that Fabre's fame quite legitimately belongs

We are, indeed, glad to think that if he was unduly overlooked at a later time, he was at least known and admired at an early period in Aveyron, and that as early as 1866 his class books were especially recommended to the attention of our young schoolmasters at the Normal College of Rodez. They could have had none better conceived or compiled. Would to heaven our public schoolmasters had always been as happily inspired or as well advised in the choice of their textbooks! Would to heaven that, instead of the dismal and misleading suggestions of materialism and impiety, there were still a place in the manuals of science, put in the hands of our children, for reflections as sane and as lofty as these. "By their practical side the sciences verge upon agriculture, medicine, and industry; but they have before all a moral advantage which is not shared in the same degree by any other branch of human knowledge: in that *by giving us a knowledge of the created universe they uplift the soul and nourish the mind with noble and salutary thoughts.*" [1]

to Provence, which has become his second country; he merely regrets that we in our "loyal kingdom" have too long allowed our good friends of the Empire to monopolise him.

[1] *Cours élémentaire d'histoire naturelle: Zoologie,* p. 1, 5th edition.

The study of the heavenly bodies in particular has this inestimable result: "*The things that we are told by stellar astronomy overwhelm the understanding and leave no room in our minds except for an impulse of religious wonder at the author of these marvels, the God whose unlimited power has peopled the abysses of space with immeasurable heaps of suns.*" [1] But the divine work "perhaps appears more marvellous still in the infinity of littleness than in the infinity of magnitude: *Magnus in magnis,* it has been said of God, *maximus in minimis.*" [2] This fine saying is verified and more or less explicitly confirmed in a thousand passages of the *Souvenirs.*

Fabre's works of popularisation are very numerous: they include no less than seventy to eighty volumes; they embrace all the elements of the sciences learned and taught by the author: arithmetic, algebra, geometry, trigonometry, mechanics, physics, chemistry, etc.; but their principal aim was to teach the natural sciences, which furnish the material of more than fifty volumes intended for the primary or secondary degree of education.

[1] *Cours élémentaire d'Astronomie,* p. 272, 7th edition.
[2] *Op. cit.,* "Avertissement ou Avant-Propos du Directeur de la collection, couronnée par l'Académie française."

In his favourite domain of the natural sciences, as in that of the other sciences, the practical tendency of his teaching was by preference directed toward agricultural applications, as is shown by the very titles of many of his books: *Eléments usuels des sciences physiques et naturelles, avec applications à l'hygiène et a l'agriculture—Le Livre des Champs—Les Auxiliaires—Les Ravageurs—Arithmétique agricole—Chimie agricole:* indeed it was with the last volume that he inaugurated his series of initiatory textbooks. For the use of young girls and future housewives, he published books on *Le Ménage, Hygiène* and *Economie domestique.*

And all these little books are presented in a picturesque and attractive form. The very titles have nothing austere about them: *Entretien de l'oncle Paul avec ses neveux sur les choses d'agriculture—Chimie de l'oncle Paul.* There is also *The Livre de Maître Paul,* the *Histoire des Bêtes,* the *Leçons des choses,* the *Livre d'Histoires* and the *Livre des Champs.* Under different titles the other volumes evoke, like these, a sort of family atmosphere; they display the same concrete style of narrative and the same lifelike charm of dialogue.

Evidently Fabre was not one of these whose "life was strangled," and his initiative stifled by the springes of University methods and the programmes beloved of the bureaucrats. On every side there was little but disdain for animals and plants; and it was these above all that he strove to popularise. When they are studied, it is only to dissect them or reduce them to abstract formulæ; but he considers them rather as they are in themselves and in their relations with human life. And while others speak of them as dead objects or as indifferent objects, to indifferent readers, Fabre speaks of them with sympathy and feeling, with the tenderness and geniality of an uncle speaking to his nephews, and he excels in communicating to his hearers the sacred fire which inspires him—the passionate love which he feels for all natural things.

It was Fabre's fine independence that made him a pioneer. Certain of his manuals may no longer be sufficiently up to date, but his methods and his tendencies are precisely those that best respond to the needs and aspirations of the present time. For a wave of serious public opinion is revealing itself in favour of a renewal of our public education.

A time will come, let us hope, when the schools will be less artificial and removed from real life, and will no longer systematically ignore religion, the family, the country and the vocation of the pupils. When that time comes, the schoolmasters will turn again to the classic Fabre handbooks, or at all events to books modelled upon his, in order to teach the little peasant boys to love their fields, their beasts, their agricultural and pastoral labours; to teach them also sometimes to lift their heads from the furrows in order to look up at the returning stars.

Begun in 1862 by the publication of a book on agricultural chemistry, Fabre's work of popularisation was continued until the appearance in 1879 of his first volume of the *Souvenirs*. It forms as it were a preface to the great entomological masterpiece. Thanks to the deserved success of the series, rather than to his wretched emoluments as professor, he achieved the security and independence necessary to the accomplishment of his mission. His class-books were the ransom that set him free. They enabled him to leave the town and escape into the fields. They even enabled him to realise his dream of a solitary corner of the earth

and a life of leisure wholly dedicated to the patient and disinterested study of his beloved insects.

From another point of view this long and patient effort of scientific popularisation and intense literary production was not without its results as regard his later work. It enabled him to obtain a mastery of his medium, to exercise his faculty of expression and his mind, to vary and mature his observations, and finally to realise that *tour de force* of writing, for specialists, books that he who runs may read, and of performing the miracle of arousing the enthusiasm of men of letters for books that compel the admiration of scientists, and attracting the attention of the scientists to books that delight the man of letters.

The brilliance, colour, and vitality which enhance without ever diminishing the high scientific value of his *Souvenirs* are due, no doubt, to his native qualities, to the limpid and harmonious Gallic genius of which he affords so admirable a type; he owes them also, as we have said, to all those tiny lives, so vibrant with diligence, and so picturesque, whose lights and shades and naïve emotions seem to have found their way into his own heart, into his style; but he owes them still

more to his young friends, the primary school-children, to the pains which he took, the ingenuity which he expended in bringing within the grasp of the child's mind, in impressing upon his imagination and sensibility as well as his understanding, the creatures and the doings of the living world.

As we have recorded, it was only in 1879 that Fabre inaugurated his great and immortal collection of *Souvenirs entomologiques*.

From this same year dates the acquisition, so greatly desired, of the open-air laboratory and his installation in the cherished solitude of Sérignan, where he was able to give free play to his entomological tastes, and to continue to add to the *Souvenirs*.

Henri Fabre was then fifty-five years of age, and apparently broken by fatigue and suffering. This did not prevent him from undertaking and accomplishing a task in which we know not which to admire the most: the acuteness of observation or the vigour of thought, the enthusiasm of the investigator or the animation of the writer. Here is a wonderful example to all those whom advancing age and life have already cruelly bruised; to all those who might be

tempted to give up or to flinch under the burden of grief or disappointment, instead of listening to the voice of their talents, the appeal of their friends, the summons of God Himself to generous and devoted action, and to the great harvest of souls and ideas.

For forty years [says Fabre] I have struggled with unshakable courage against the sordid miseries of life; and the corner of earth I have dreamed of has come at last.

The wish is realised. It is a little late, O my pretty insects! I greatly fear that the peach is offered to me when I am beginning to have no teeth wherewith to eat it. Yes, it is a little late; the wide horizons of the outset have shrunk into a low and stifling canopy, more and more straitened day by day. Regretting nothing in the past, save those whom I have lost; regretting nothing, not even my first youth; hoping nothing either, I have reached the point at which, worn out by the experience of things, we ask ourselves if life be worth the living.[1]

In the touching, desolate accents of these lives we may, no doubt, hear the echoes of a whole lifetime of toil and trial; but above all they express the cruel grief which had just wrung the kindly, tender heart of the great scientist. He was still suffering from

[1] *Souvenirs,* II., p. 3. *The Life of the Fly,* chap. i., "The Harmas."

the blow dealt him by the death of his beloved son Jules at the moment of writing these lines on the first page of the second volume of the *Souvenirs,* piously dedicated to the memory of the lost child.

Happily he found in his "insuperable faith in the Beyond"[1] the courage to overcome his grief and in his "love of scientific truth" the possibility of taking up his life again and resuming his work.

Amid the ruins that surround me, one strip of wall remains standing, immovable upon its solid base; my passion for scientific youth. Is that enough, O my busy insects, to enable me to add yet a few seemly pages to your history? Will my strength not cheat my good intentions? Why, indeed, did I forsake you so long? Friends have reproached me for it. Ah, tell them, tell those friends, who are yours as well as mine, tell them that it was not forgetfulness on my part, not weariness, nor neglect: I thought of you; I was convinced that the Cerceris' cave had more fair secrets to reveal to us, that the chase of the Sphex held fresh surprises in store. But time failed me; I was alone, deserted, struggling against misfortune. Before philosophising, one had to live. Tell them that; and they will pardon me.[2]

[1] Dedication of vol. II. of the *Souvenirs.*

[2] *Souvenirs,* II., p. 4. *The Life of the Fly,* chap. i., "The Harmas."

From the very beginning of his great entomological work Fabre sought to free himself from another reproach, which wounded him to the quick, because it struck at his fidelity to his chosen study, and, what is more, to scientific truth:

Others again have reproached me with my style, which has not the solemnity, nay, better, the dryness of the schools. They fear lest a page that is read without fatigue should not always be the expression of the truth. Were I to take their word for it, we are profound only on condition of being obscure. Come here, one and all of you—you, the sting-bearers, and you, the wing-cased armour-clads—take up my defence and bear witness in my favour. Tell of the intimate terms on which I live with you, of the patience with which I observe you, of the care with which I record your actions. Your evidence is unanimous: yes, my pages, though they bristle not with hollow formulæ nor learned smatterings, are the exact narrative of facts observed, neither more nor less; and whoso cares to question you in his turn will obtain the same replies.

And then, my dear insects, if you cannot convince those good people, because you do not carry the weight of tedium, I, in my turn, will say to them:

"You rip up the animal and I study it alive; you turn it into an object of horror and pity, whereas I cause it to be loved; you labour in a torture-chamber and dissecting-room, I make my observations

under the blue sky, to the song of the Cicadas;[1] you subject cell and protoplasm to chemical tests, I study instinct in its loftiest manifestations; you pry into death, I pry into life.

Our author's strong personality is revealed no less in the bulk of his work than in this declaration of principles which might serve as a prologue to the latter.

"With the originality of genius he is from the first totally opposed to the *point of view* of those naturalists who are fascinated by morphology and anatomy."[2] He believes that the characteristics of life are to be found in life itself, and that if we wish truly to know the insect, nothing will help us so much as seeing it at work. "Mere common sense, the reader will say, yet it is by no means common"; and it usually happens that writers "forget to take performance into their reckoning when they are describing life."[3]

To study *living entomology,* that is, to study the insect living its life and in the

[1] The Cicada is the *Cigale,* an insect akin to the Grasshopper and found more particularly in the south of France. Cf. *Social Life in the Insect World,* chaps. i.-iv., and *The Life of the Grasshopper,* chaps. i.-v.—A. T. DE M.

[2] F. Marguet, *Revue des Deux Mondes,* December 15, 1910.

[3] *Ibid.*

highest manifestations of its life, in its instincts and its habits, in its aptitudes and its passions, in a word, in its psychic faculties; to replace the dominant standpoint of morphology and physiology by the standpoint of biology and psychology; such is the essential programme of the writer of the *Souvenirs*.

And he adheres to it all the more strictly the more he sees it neglected by those about him, judging it to be of still greater importance for one who is seeking to know the insect, more advantageous to practice and speculation, more essential to the open-air life and the most abstruse inquiries of the human mind. By curiously interrogating the life of the insects one may render inestimable services to agriculture, as Pasteur did in his investigation of serici-culture; one may also "furnish general psychology with data of inestimable value," and this in particular was what he proposed to do. M. Fabre's restless mind is for ever haunted by the most abstruse problems, which, indicated here and there, enable us to understand the motives that urge him on. With reference to these the insect is no longer an end: it becomes a means. Above all, M. Fabre wishes to define instinct; to establish the line of de-

marcation which divides it from intelligence, and to demonstrate whether human reason is an irreducible faculty or whether it is only a degree higher on a scale whose base descends into the depths of animality. More generally he propounds the question of the identity or the difference between the animal mind and the human. He also seeks to examine the problem of evolution; finally, to discover whether geometry rules over all things, and whether it tells us of a Universal Geometer, or whether "the strictly beautiful, the domain of reason, that is, order, is the inevitable result of a blind mechanism." [1]

And to tell the whole story in a few words, the essential object, the general impulse of this curious and powerful mind, which refuses to divide science from philosophy, is to consider the insect, how it lives; to note its actions and its movements; to reach its inner from its outer life; its inward impulse from its external action; and then to climb upwards from the insect to man and from man to God.

Fabre never attempts to solve the problems which he propounds *a priori*. Before thinking as a philosopher he observes as a scientist. His method is strictly experimen-

[1] F. Marguet, *op. cit.*

tal. "To observe the crude fact, to record it, then to ask what conclusion may be based upon this solid foundation, such is M. Fabre's only rule; and if we oppose him with arguments he demands observations." [1]

"See first; you can argue afterwards." "The precise facts are alone worthy of science. They cast premature theories into oblivion."

He always makes direct for the facts as Nature presents them. The books fail him or are not to his liking. Most of them dissect the insect; he wants it alive and acting. The best contain but the shadow of life; he prefers life itself. If he happens to quote them, it is usually to deplore their deficiencies or to correct their errors, or perhaps to do homage to a precursor or a rival, but not to borrow from them the history of an insect.

This history he wishes to take from life, and he refuses to write except according to Nature and the data provided by the living subject. His narratives are always the result of strictly conscientious and objective inquiries: he records nothing that he has not seen, and if he has sometimes heightened his pictures by somewhat vivid hues, he has

[1] F. Marguet, *op. cit.*

only given his style the relief and the colour of his subject. The danger of such scientific records when they are written by a man of letters and a poet like Fabre into the bargain is that there is a danger of their being written with more art than exactitude. And it is apparently this that causes so many scientists to distrust science that also claims to be literature. Fabre was not always immune from this species of discredit which the writer may so easily cast upon the scientist. But this unjust accusation was long ago withdrawn, and to-day all are agreed as to the absolute truthfulness of his portraits and his records. He has talent and imagination, it is true, but he has applied his talent to the sincere investigation of the facts, and his imagination only to achieve the more complete and faithful expression of the reality. A great thinker once uttered this profound saying: "Things are perceived in their truth only when they are perceived in their poetry." This saying might serve as a motto for the whole of Fabre's entomological work.

To collect the data which he requires for the foundation of his philosophical structures, Fabre is not content with observing the insect as it lives and labours when left to

itself, writing down, so to speak, at its dictation the data which it deigns to give him as it would give them to any one who possessed the same patience and the same gift for observation. After these first overtures, he seeks more confidential information; to obtain this he inverts the parts played by observer and insect; from being passive he becomes active; he provokes and interrogates, and by different experiments, often of wonderful ingenuity, he enables and even compels the insect to confide to him what it would never have divulged in the normal course of its life and occupations. Fabre is the *first* to think of introducing this kind of artificial observation, which he calls experiment, into the study of the animal "soul."

To practise it more readily, he needs the insect close within his reach; more than that, he needs it under his hand, at his discretion, so to say. Neither the great museum of the fields nor the place of observation where the insects "roam at will amid the thyme and lavender" quite answers the requirements of this part of his programme. So at various points of the *harmas* all those appliances which we have already described were set up, "rustic achievements, clumsy combinations of trivial things." In addition to these ap-

pliances in the open air, there are those inside the house: some are installed in the study, so that the experimenter "can see his insects working on the very table upon which he is writing their history"; [1] others are arranged in a separate room known as the "animal laboratory."

It is a great, silent, isolated room, brilliantly lighted by two windows facing south, upon the garden, one of which at least is always open that the insects may come and go at liberty. . . . The middle of the room is entirely occupied by a great table of walnut-wood, on which are arranged bottles, test-tubes, and old sardine boxes, which Fabre employs in order to watch the evolution of a thousand nameless or doubtful eggs, to observe the labours of their larvæ, the creation and hatching of cocoons, and the little miracles of metamorphosis, after a germination more wonderful than that of the acorn which makes the oak.

Covers of metallic gauze resting on earthenware saucers full of sand, a few carboys and flower-pots or sweetmeat jars closed with a square of glass; these serve for observation or experimental cages in which the progress and the actions of these tiny, living machines can be investigated.[2]

Fabre reveals a consummate skill in this difficult and delicate art of experimentation

[1] *Souvenirs*, IV., p. 222.
[2] *Fabre, Poet of Science*, G. V. Legros, pp. 147, 149.

and inducing the insect to speak. The smallest incident, insignificant to a mind less alert than his, suggests further questions or gives rise to sudden intuitions and preconceived ideas which are immediately subjected to the test of experiment. But it is not enough to question the insect; one must understand its replies; it is not enough to collect or even to provoke data. One must know how to interpret them.

> And here truly we come to the prodigy; for his sympathy for animals gives M. Fabre a sort of special sense, which enables him to grasp the meaning of its actions, as though there were between it and himself some actual means of communication, something in the nature of a language.[1]

But there is something even more remarkable than this penetration and certainty of analysis; it is the prudence with which he goes forward step by step, without leaving anything vague or doubtful; the reserve with which he pronounces upon all that goes beyond the obvious meaning of the facts; the frankness and modesty with which he admits that he hesitates or does not know. It often happens that this scrupulous spirit leads

[1] F. Marguet, *op. cit.*

to doubt. "The more I observe and experiment, the more I feel rising before me, in the cloudy blackness of the possible, a vast note of interrogation." We might even find that on certain occasions the fear of going astray has caused him to limit to excess the range of his interpretation. But this is done only to give greater weight to his assertions, wherever they are expressed firmly and with quiet assurance. In short, there is reason to subscribe to the flattering judgment of his first biographer, who sees in the *Souvenirs* not only the most wonderful entomological repertory, but a true "essay upon method," which should be read by every naturalist, and the most interesting, instructive, familiar, and delightful course of training that has ever been known." [1]

The most interesting, instructive, and delightful course of training: his books are this, not only in virtue of the writer's method and point of view, but in virtue of *his language*. For the living scenes of the *Souvenirs,* as well as the interpretations interspersed between them, are expressed in words so simple and so well chosen that

[1] *Fabre, Poet of Science,* G. V. Legros, translated by Bernard Miall, pp. 159-160.

they are realised without effort and in the most striking relief in the reader's mind and imagination.

Fabre hates to see science make use of pedantic and pseudo-scholastic terminology. Apart from the fact that it may repel the reader, all this idle apparatus of obscurity serves only too often to mask error or vagueness of thought.

By seasoning the matter with indigestible terms, useful for dissimulating vagueness of thought, one might represent the Cione as a superb example of the change brought about by the centuries in the habits of an insect. It would be very scientific, but would it be very clear? I doubt it. When my eyes fall upon a page bristling with barbarous locutions, supposedly scientific, I say to myself: "Take care! The author does not properly understand what he is saying, or he would have found, in the vocabulary which so many clever minds have hammered out, some means of clearly stating his thought."

Boileau, who is denied the poetic afflatus, but who certainly possessed common sense, and plenty of it, informs us:

"Ce que l'on conçoit bien s'énonce clairement."
(That which is clearly grasped is plainly said.)

"Just so, Nicolas! Yes, clearness, always clearness. He calls a cat a cat. Let us do the same: let

us call gibberish a most learned prose, to afford a pretext for repeating Voltaire's witty remark: 'When the listener does not understand and the speaker himself does not know what he is saying, that is metaphysics.' Let us add: 'And abstruse science.'"

My conviction is that we can say excellent things without using a barbarous vocabulary. Lucidity is the sovereign politeness of the writer. I do my best to achieve it.[1]

Thanks to his love of lucidity and simplicity, as much as to his frank and modest spirit, he had a horror of verbal snobbery and juggling with pretentious words. Official science itself, and, as he says bluntly, "official jargon,"[2] find no more favour in his eyes than the sins of incidental writers.

As a boy [writes Fabre] I was always an ardent reader; but the refinements of a well-balanced style hardly interested me: I did not understand them. A good deal later, when close upon fifteen, I began vaguely to see that words have a physiognomy of their own. Some pleased me better than others by the distinctness of their meaning and the resonance of their rhythm; they produced a clearer image in my mind; after their fashion, they gave me a picture of the objects described. Coloured

[1] *Souvenirs*, x., pp. 100, 101.
[2] *Souvenirs*, vi., p. 296.

by its adjective and vivified by its verb, the name became a living reality: what it said I saw. And thus, gradually, was the magic of words revealed to me, when the chances of my undirected reading placed a few easy standard pages in my way.[1]

The *magic of words!* He has done more than discover it in the pages of other writers. He has illustrated it on every page of his own writings, adapting it so exactly to the magic of things that it delights the scientist as Nature herself would, and enchants the poet and the man of letters as only the masterpieces of art and literature have power to do.

[1] *Souvenirs,* IX., pp. 176-178. *The Mason Bees,* chap. xi., "The Jeucoopes."

CHAPTER XX

FABRE'S WRITINGS (CONTINUED)

IN attempting to define the point of view, the method, and the style of the author of the *Souvenirs,* we have broadly sketched the general characteristics of his work. In order to complete our task, and to give a clear and comprehensive idea of his art, we will now venture upon a rapid analysis not of the author's attitude but of the content of his works.

The *Souvenirs entomologiques* bear a sub-title which perfectly describes their essential and characteristic elements. They are offered as "Studies in the Instincts and Habits of the Insects," which promise us both theoretical considerations and records of facts:

> At the very outset, and to judge only very superficially, it seems that these latter are the essential part of the work, and the author must be considered before all as an admirable anecdotist, or, if you will, a chronicler of animal life. But we very

soon perceive, on reading him, how much method, selection, and persevering determination have presided over all these investigations, which may appear almost incoherent, and are, on the contrary, profoundly systematic and definitely ordered.[1]

François Coppée, in a delightful story, shows us an austere landscape gardener fiercely destroying all the sparrows and, above all, the blackbirds, which disturb and dishonour the magnificent symmetry of his paths, which were clipped straight with the aid of a taut cord. Our gentleman does not leave a single one alive. . . . But on the other side of the party wall is a true poet, who, not having the same æsthetic, buys every day a quantity of birds in the market, and indefatigably "puts back the blackbirds" into his neighbour's shrubberies.[2]

Fabre's work is that of a conscientious architect who has sought to keep the shrubberies and alleys of his garden in strict order, but the racial poet lurking behind the architect has released so many blackbirds that he seems to have destroyed the tidiness of the garden. Just at first, the *Souvenirs* produce somewhat the same impression as the *harmas,* where the thousand actors of the rural stage follow one another, appear and reappear, at varied intervals, at the will

[1] J. P. Lafitte, *La Nature,* March 26, 1910.
[2] Jean Aicard, *Eloge de F. Coppée.*

of opportunity or caprice, without premeditated order. But the observer is not always master of his encounters and discoveries, and Fabre wished to give us, in his books, the faithful record of his observations, and afford us the pleasure in our turn of those unexpected encounters, those marvellous discoveries which made his life an enchantment, and which lend his narrative an interest equal to that of the most dramatic romance.

Yet there has been a selection, a definite arrangement of the vast collection of data collected in the ten volumes of the *Souvenirs*.

But this arrangement and this selection are by no means inspired by the official classifications. We may attempt, as many eminent naturalists have done, to class his various monographs in the classic manner. We shall then say, with M. Perrier, that he is not greatly occupied with the Lepidoptera, that he studies more particularly the Hymenoptera, Coleoptera, and Orthoptera, without neglecting the Arachnoids, which are Arthropods, not insects properly so called. It is a fact that this singular entomologist prefers the horrible Spiders, to whom all the good text-books refuse the name of insect, to the most beautiful Butterflies. It is true

that he is especially attracted by the four-winged flies, the Wasps and wild Bees, the Dung-Beetles and Necrophori, the Mantes, Grasshoppers, and Scorpions; but this is not because of any particular affection for this group or on account of their quality of Hymenoptera, Coleoptera, and Orthoptera; for many of their congeners are neglected and many insects are selected out of their order. This is bound to be the case, for the official classification is conceived on totally different lines to his own, going by the form of the insect without heeding its actions and its habits. It is much the same with the official nomenclature.

"If, by chance, an amalgam of Greek or Latin gives a meaning which alludes to its manner of life, the reality is very often in disagreement with the name, because the classifier, working over a necropolis, has outstripped the observer, whose attention is fixed upon the community of the living." [1]

So the historian of the insects takes the greatest liberties with official science and the official language.

A Spider is not an insect, according to the rules of classification; and as such the Epeira seems out

[1] *Souvenirs*, x., p. 79.

of place here. A fig for systems! It is immaterial to the student of instinct whether the animal have eight legs instead of six, or pulmonary sacs instead of air-tubes.[1]

Above all, Fabre is interested in the study of instinct. It is this that determines his choice of the species and the data with which he occupies his leisure and entertains his readers.

Led by this purpose, allured by this vision, he turns by preference to the most richly-endowed species, disdaining the inept, though they may be the most beautiful and the most resplendent, like the Butterflies; and he is often attracted by creatures, great or small, which have scarcely anything in common with the insects save their habits. Thus the ferocity of the Spiders will justify their taking rank next to the Scorpions, the Mantes and the Grasshoppers, the cruelest and most ancient of terrestrial creatures.

Fabre, in fact, seldom departed from the world of insects, because it is in this little world that the greatest miracles of instinct are manifested, in accordance with the entomologist's motto *Maxima in minimis*.

[1] *Souvenirs,* VIII., p. 346. *The Life of the Spider,* chap. II., "The Banded Epeira."

And, as though to increase this prodigious contrast, it often happens that the most remarkable instincts are allotted to the smallest and most despised of insects:

Among the insects it is often the case that one well known to all is a mere simpleton, while another, unknown, has real capacity. Endowed with talents worthy of attention, it remains misunderstood; rich in costume and imposing in deportment, it is familiar to us. We judge it by its coat and its size, as we judge our neighbour by the fineness of his clothes and the place which he occupies. The rest does not count.

Certainly, in order to deserve historical honours, it is as well that the insect should possess a popular reputation. It reassures the reader, who is at once precisely informed; further, it shortens the narrative, rids it of long and tedious descriptions. On the other hand, if size facilitates observation, if grace of form and brilliance of costume captivate the eye, we should do wrong not to take this outward show into account.

But far more important are the habits, the ingenious operations, which give entomological studies their serious attraction. Now it will be found that among the insects the largest, the most splendid, are usually inept creatures: a contradiction which is reproduced elsewhere. What can we expect from a Carabas, all glittering with metallic lights? Nothing but feasting in the slime of

murdered snail. What of the Cetonia, escaped, one would think, from a jeweller's show-case? Nothing but drowsing in the heart of a rose. These splendid creatures do nothing; they have no art or craft.

But, on the other hand, if we are seeking original inventions, artistic masterpieces and ingenious contrivance, let us apply to the humblest, more often than not unknown to all. And let us not be repulsed by appearances. Ordure reserves for us beautiful and curious things of which we should not find the like upon the rose. So far the Minotaur has enlightened us by her family habits. Long live modesty and littleness![1]

The small and modest, provided they are valiant and ingenious, and more generally all those that commend themselves by unusual habits or singular technical aptitudes: such are the insects investigated by the author of the *Souvenirs*. These he follows up for years, sometimes in their natural environment, sometimes in his laboratory. He inquires into their manner of assuring themselves and their race of a livelihood, their fashion of behaviour toward their congeners and their offspring; their industry and their habits are his two chief preoccupations, those which are brought into prominence by the

[1] *Souvenirs*, x., pp. 78-79.

sub-title of his book: " Studies in the Instincts and Habits of the Insects," and the titles of the two volumes of selections which have been published for the general reader: *La Vie des Insectes* and *Les Mœurs des Insectes.*

It is, therefore, about these two principal themes, which are, for that matter, very closely connected and very subject to mutual interpenetration, that the data amassed in the ten volumes of the *Souvenirs* must be grouped and distributed, if we wish to attempt a classification in harmony with the character of the books and the nature of their contents.

By thus assuming the point of view of the author himself and adopting the principle and the form of his classifications and denominations, we shall discover, in this little entomological world, which seems to have been staged a little at random, a society as rich and varied as our own, in which almost all trades and all characters are represented, all the industries and habits of humanity.

Here, as among us, are honest toilers and free-booters, producers and parasites; good and bad husbands and wives; examples of beautiful devotion and hideous egoism; delightful amenities and ferocious cruelties, ex-

tending even to cannibalism; workers of every class and manufacturers of every kind, and, in a higher order of capacities, engineers and surgeons, chemists and physicists, naturalists and physiologists, topographers and meteorologists, geometricians and logicians, and many more, whose enumeration we will leave to the reader.

"Let us assemble facts in order to obtain ideas," said Buffon. In this process may be summed up the whole of the great Provençal naturalist's scientific work. If he notes the least circumstances of the little lives that unfold themselves before his eyes, he does so not merely as an observer and an artist who would not miss the smallest element of knowledge or beauty, but also as a philosopher who wishes to understand all that he sees, and for that reason neglects nothing. In entomology the smallest facts are not only the most curious and picturesque, they are often the most significant: *maxima in minimis*. Those minute details which are in danger of being regarded as "puerilities are connected with the most solemn questions which it is possible for man to consider." [1]

[1] *Souvenirs*, x., p. 92.

There are philosophical meditations in Fabre's work, evoked by his observations, and, like his observations, they are not presented in a preconceived order. His arguments are scattered throughout his work. Nowhere in the *Souvenirs* is there any body of doctrine. They contain only studies of the habits of individual insects; and it is only when he has gathered certain data or made certain experiments that the author gives us his conclusions or explanations or attacks the errors of the theories in vogue.

Yet it is not difficult, such is their degree of prominence and continuity, to disengage and synthetise the general ideas scattered throughout this vast collection of facts. We shall make the attempt in order to give the reader at least a glimpse of the writer's attitude toward the problems of science and of life.

From the achievements and actions of the insects, the philosophic mind of the naturalist first of all deduces, very clearly, the general laws of their activity.

What strikes us at once is the wonderful degree of knowledge presupposed by certain of their actions: for all that instinct impels the insect to do is marked by perfect wisdom, comparable and even superior to

human wisdom. This first law of instinct is brought into especial prominence by the author of the *Souvenirs* in his study of the Hunting Wasps.

These Wasps, which are themselves purely vegetarian, know that their larvæ must have animal food; fresh succulent flesh still quivering with life.

Some, like the Common Wasp, which watches over the growth of its offspring, feed the larvæ from day to day, as the bird brings beakfuls of food to its nestlings, and these kill their prey, which they are thus able to serve to their larvæ perfectly fresh.

But the majority do not watch over the hatching or the growth of their larvæ. They are forced therefore to lay up a store of food beforehand. They know this, and are not found wanting. But here they are confronted by a most difficult problem. If the prey carried to the nest is dead, it will quickly putrefy; it cannot possibly keep fresh, as it must, for the weeks and months of the larva's growth. If it is alive it cannot easily be seized by the larvæ, and will represent a menace or even a deadly danger. The Wasp must discover the secret of producing, in her victims, the immobility of death together with the incorruptibility of life. And the

Wasps have discovered this secret, for the prey which they provide for their larvæ remain at their disposal to the end without movement and without deterioration. Do these tiny creatures know intuitively the secrets of asepsis which Pasteur discovered with so much difficulty? Such was the conclusion with which Dufour was forced to content himself. He presumed the existence, in the Hunting Wasps, of a virus which was at once a weapon of the chase and a liquid preservative, for the immolation and conservation of the victims. But even if aseptic a dead insect would shrivel up into a mummy. Now this must not occur, and as a matter of fact the Wasp's victims remain moist indefinitely, just as if alive. And in reality they are not dead; they are still alive. Fabre has demonstrated this by proving the persistence of the organic functions, and by feeding some of them by hand. In short, it is incontestable that the victims are not put to death but merely deprived of movement, smitten with paralysis. How has this result, more miraculous even than asepsis, been obtained by the insect? By the procedure that the most skilful physiologist would employ. By plunging its sting into the victim's body, not at random, which might kill it, but at certain defi-

nite points, exactly where the invisible nervous ganglia are located which control the various movements.

For the rest, the operative method varies according to the species and anatomy of the victim.

In his investigation of the paralysers, Dufour was unable to imagine any other weapon of the chase than the mere inoculation of a deadly virus; the Hymenopteron has invented a means of immobilising her victim without killing it, of abolishing its movements without destroying its organic functions, of dissociating the nervous system of the vegetative life from that of the life of reaction; to spare the first while annihilating the second, by the precise adaptation of this delicate surgery to the victim's anatomy and physiology. Dufour was unable to provide anything better for the larva's larder than mummified victims, shrivelled and more or less flavourless; the Hymenopteron provided them with living prey, endowed with the strange prerogative of keeping fresh indefinitely without food and without movement, thanks to paralysis, far superior in this connection to asepsis.

"He, the master, skilled among the skilful, trained in the finest operations of

anatomy; he who, with lens and scalpel, had examined the whole entomological series, leaving not a corner unexplored; he, finally, who has nothing more to learn of the organisation of the insect, can think of nothing better than an antiseptic fluid which gives at least an appearance of an explanation of a fact that leaves him confounded," and of which he has not discovered the full miracle. The author of this immortal discovery rightly insists on " this comparison between the insect's instinct and the scientist's reason, the better to reveal in its true light the crushing superiority of the insect."

As though to give yet another verification of the words so justly applied to entomology —*maxime miranda in minimis*—the larva's science is perhaps even more disconcerting than that of the perfect insect.

The Scolia's larva stupefies us by the order in which it proceeds to devour its victim.

" It proceeds from the less essential to the more essential, in order to preserve a remnant of life to the very last. In the first place it absorbs the blood which issues from the wound which it has made in the skin; then it proceeds to the fatty matter enveloping the internal organs; then the muscular layer lining the skin; and then, in the

last place, the essential organs and the nerve-centres." [1] "We thus have the spectacle of an insect which is eaten alive, morsel by morsel, during a period of nearly a fortnight, becoming empty and emaciated and collapsing upon itself," while preserving its succulence and moisture to the end.

Starting with these typical facts, which testify to an infallible foresight and a perfect adaptation of the means to the end, the list might be indefinitely prolonged with the aid of Fabre's memoirs. But these are enough to show us that "what instinct tells the animal is marvellously like what reason tells us," so that we find nothing unnatural in Fabre's exclamation when he is confronted by the profound knowledge of the Hymenopteron and "the sublime logic of her stings." "Proud Science, humble yourself!" All this presumes, in short, in the microscopic little creatures an astonishingly rational inspiration which adapts means to the end with a logic that confounds us.

And all this would be very much to the credit of the insect and to the disadvantage of man if there were not a reverse side to the medal. But the same insect that confounds us by its knowledge and wisdom also

[1] *Revue des Deux-Mondes*, Dec. 1910, p. 875.

disconcerts us by its ignorance and stupidity.

The best-endowed insect cannot do anything "outside the narrow circle of its attributions. Every insect displays, in its calling, in which it excels, its series of logically co-ordinated actions. There it is truly a master." [1] Apart from this it is utterly incapable. And even within the cycle of its attributions, apart from the customary conditions under which it exercises them, the ineptness of the insect surpasses imagination.

Let us consider the facts.

One of these Hymenoptera whose impeccable science we were admiring just now, a Languedocian Sphex, is busy closing the burrow in which she has laid her egg with its store of game. We brush her aside, and plunder her nest before her eyes. Directly the passage is free, she enters and remains for a few moments. Then she emerges and proceeds to stop up the cell, as though nothing were the matter, as though she had not found her burrow empty, as though the work of closing the cell had still a motive.[2]

The Mason-Bee, excellently endowed in the matter of boring, emerges from her nest

[1] *Souvenirs*, I., pp. 265, 314; V., p. 99; VII., p. 48.
[2] *Ibid.*, I., 171-175. *The Hunting Wasps*, chap. X., "The Ignorance of Instinct."

of mortar by piercing the earthen dome which covers it. Let us cover the nest from which the Bee is about to emerge with a little paper bag. If the bag is placed in contact with the nest so as to make one piece with it, so to speak, the Bee perforates it and liberates herself. If it is not in contact with the nest, she remains imprisoned and will let herself die without perforating the bag.

"Here, then, are sturdy insects for whom boring tufa is mere child's play, which will stupidly let themselves perish imprisoned by a paper bag," [1] to which it does not even occur to bite a second time through the frail envelope through which they have already bitten once when it was, so to speak, part of the earthen enclosure.

The Wasp, which is such a marvellous architect, and so skilful a digger, is no better able to employ her talents. During the night we place a bell-glass over a Wasp's nest. In the morning the Wasps issue forth and struggle against the glass wall, but not one of them dreams of digging at the foot of the treacherous circle. But one Wasp, of several which have strayed from the community, coming from outside, opens up a way

[1] *Souvenirs*, I., pp. 297-298. *The Mason-Bees*, chap, ii., "Experiments."

to the nest under the edge of the bell-glass, which is a natural enough proceeding for an insect returning from the fields, who may have to gain her nest through falls of earth in the entry. But even this particular Wasp cannot repeat the operation in order to emerge from the bell-glass, and the whole community eventually die prisoners after a week of futile agitation. The entomologist finds this ineptness of the Wasp repeated in the Necrophori, who nevertheless have a great reputation for intelligence, and, in general, in all the insects which he has had occasion to rear under a bell-glass.

The larva is subject to the same absurdities as the adult insect. The Scolia's larva, which eats in such a scientific manner, is quite unable to apply its remarkable talents the moment it is off the beaten track. Placed on the victim's back at a spot which is not the normal point of attack, placed on a Cetonia-grub that is immobilised without being paralysed, or merely removed for a moment from its position, it is no longer able to do anything right.

By a strange contradiction, characteristic of the instinctive faculties, profound knowledge is associated with an ignorance no less profound. . . .

For instinct nothing is difficult, so long as the action does not diverge from the immutable cycle laid down for the insect; for instinct, again, nothing is easy if the action has to diverge from the paths habitually followed. The instinct which amazes us, which terrifies us by its supreme lucidity, astonishes us by its stupidity a moment later, when confronted with the simplest situation which is alien to its ordinary practice. . . . Instinct knows everything in the invariable tracks which have been laid down for it; nothing when off this track.

Sublime inspirations of science and amazing inconsequences of stupidity are both its heritage, accordingly as it is acting under normal or accidental conditions.[1]

It would be interesting to pursue this inquiry into the general laws of instinct, and to give, as a pendant to the antithesis of its wisdom and stupidity, the no less singular antithesis of its automatism and its variations. But that we may not beyond all measure enlarge the proportions of this monograph we will pass on at once to the determination of the causes of instinct, as related by our naturalist philosopher.

[1] *Souvenirs*, I., p. 165. *The Hunting Wasps*, chap. X., "The Ignorance of Instinct." *Ibid.*, IV., p. 238; V., p. 90. *The Sacred Beetle and Others*, chap. VII., "The Broad-necked Scarabæus."

The *laudator temporis acti* is untimely, for the world progresses. Yes, but backwards at times. In my young days, in the twopenny classics, we were taught that man is a reasoning animal; to-day, in learned volumes, it is demonstrated that human reason is only a higher degree upon a scale whose base descends into the depths of animality. There is the more and the less, and all the intermediate degrees, but nowhere a sudden solution of continuity. It begins at zero in the albumen of a cell, and rises to the mighty brain of a Newton. The noble faculty of which we were so proud is a zoological attribute.

This is an assertion of grave significance. . . . Assuredly we have need of ingenuousness in entomology. Without a good dose of this quality, sheer wrongheadedness in the eyes of practical folk, who could trouble himself about insects? Yes, let us be naïve, without being childishly credulous. Before making the animal reason, let us reason a little ourselves. Above all, let us consult the experimental test. Facts gathered at random, without a critical selection, cannot constitute a law.[1]

And the prudent naturalist sifts all the anecdotes and records of habits, all the rational or sentimental achievements which the

[1] *Souvenirs*, II., p. 157. *The Mason-Bees*, chap. vii., "Reflections upon Insect Psychology." *Ibid.*, VI., pp. 116, 131, 148. *The Glow-Worm and Other Beetles*, chap. xii., "The Burying Beetles: Experiments;" also *Wonders of Instinct*, chap. vi.

writers of books and the "glorifiers of the animal" pass from hand to hand, showing clearly that all the facts alleged in proof of the intelligence of animals are ill-observed or wrongly interpreted.

Having shown in its true light one of these fabricated facts related by Clairville, he cries:

> Yet one more of the fine arguments in support of the animal's reasoning powers that takes to flight in the light of experiment. . . . I admire your candid faith, my masters, you who take seriously the statements of chance observers richer in imagination than in veracity. I admire your credulous enthusiasm, when, without criticism, you support your theories on such stupidities.[1]

Fabre has no greater faith in the virtue of animals than in their reason, since one cannot exist without the other. It is true that the Copris, the most richly endowed of insects in respect of the maternal instinct, does not differentiate between the care which she lavishes on strangers and that which she gives to the children of her household; but the pitiless observer shows that this is because she cannot distinguish between them.

[1] *Souvenirs,* VI., pp. 130, 143. *The Glow-Worm and Other Beetles,* chap. xii., "The Burying Beetles: Experiments."

It is not the function of impartial history to maintain a given thesis; it follows where the facts lead it.[1]

The historian of the insects simply confronts the facts of the entomological world which he has explored under all its aspects:

To speak with certainty, we must not depart from what we really know. I am beginning to know the insect passably well after forty years of intercourse with it. Let us question the insect: not the first comer, but the best endowed, the Hymenopteron. I am generous to my opponents. Where will you find a creature richer in talents? . . . Well, does this refined and privileged member of the animal kingdom reason?

And, first of all, what is reason? Philosophy will give us learned definitions. Let us be modest; let us stick to the simplest; we are only dealing with animals. Reason is the faculty which refers the effect to the cause, the means to the end, and directs the action by making it conform to the requirements of the accidental. Within these limits is the animal able to reason? Does it understand how to associate a *because* with a *why,* and behave in accordance? Can it, confronted with an accident, alter its line of conduct?[2]

[1] *Souvenirs,* v., pp. 141, 142, 150. *The Sacred Beetle and others,* chap. xvi., "The Lunary Copris." *The Glow-Worm and Other Beetles,* chap. xi., "The Burying Beetles."

[2] *Souvenirs,* II., p. 159. *The Mason-Bees,* chap. vii.

To all these questions the facts already cited have replied. It is evident that the Hymenopteron which provisions or closes the nest found empty under the conditions which we have seen imposed upon the Sphex or the Pelopæus, is ignorant of the *why* of her work and does not in any case connect it with its natural aim, which is the rearing of the larvæ.

These expert surgeons, these marvellous anatomists know nothing whatever, not even what their victims are intended for. Their talent, which confounds our reason, is devoid of a shadow of consciousness of the work accomplished, a shadow of foresight concerning the egg.[1]

Fabre, then, has vainly sought for "proofs" of the intervention of reason in the actions of the insect. He has not found them. He has even found the very contrary; the insect, interrogated as to its powers of reason and "the logic attributed to it," has plainly replied that it is entirely lacking in reason and that logic is not its strong point.

"Reflections upon Insect Psychology." *Souvenirs,* VI., 116. *The Glow-Worm and Other Beetles,* chap. xi. "The Burying Beetles"; see also *Wonders of Instinct,* chap. vi.

[1] *Souvenirs,* IV., p. 238.

Yet he is far from wishing to "belittle the merits" or "diminish the reputation" of his beloved insects. No one can be less suspected of prejudice against them, since none has "glorified" them more abundantly; no one has spoken of them with greater admiration and sympathy; no one has more fully described their high achievements, and no one has revealed such unknown and incredible marvels on their behalf. It is enough to recall the "miracles" of the science and wisdom of the paralysers.

But far from invalidating the conclusion drawn from the obvious stupidity of the insect even in the actions which are its specialty, the science and wisdom of instinct afford it a striking confirmation. The very "slightest glimmer of intelligence" would suffice to make the insect do what it does not and leave undone what it does even within the circumference of its attributions. If it is plainly devoid of this glimmer, how much more plainly is it devoid of that "splendour of intelligence" which the "miracles" of instinct would require![1] To sum up, the insect sins too greatly by excess and by defect in its instinctive actions to justify our attributing to it an understanding of these actions; we are

[1] *Souvenirs*, II., p. 138; VI., pp. 98, 117.

indeed compelled absolutely to deny it any such understanding. It does at once too much and too little; too much for an insect's intelligence and too little for any intelligence whatever. Everything is against it; its knowledge as much as its ignorance; its logic as much as its inconsequences.

So long as its circumstances are normal, the insect's actions are calculated most rationally in view of the object to be attained. What could be more logical, for instance, than the devices employed by the Hunting Wasp when paralysing her prey so that it may keep fresh for her larva, while in no wise imperilling that larva's safety? It is pre-eminently rational; we ourselves could think of nothing better; and yet the Wasp's action is not prompted by reason. If she thought out her surgery, she would be our superior. It will never occur to anybody that the creature is able, in the smallest degree, to account for its skilful vivisections. Therefore, so long as it does not depart from the path mapped out for it, the insect can perform the most sagacious actions without entitling us in the least to attribute these to the dictates of reason.[1]

These acts of instinct, so scientifically devised and so rationally performed by works

[1] *Souvenirs*, I., p. 220. *The Hunting Wasps*, chap. xiii, "The Ammophila."

devoid of either judgment or reason, must be explained by referring them to a proportionate cause, whence proceed the logic and the science which evidently do not proceed from the insect itself.

I consign to the meditations of philosophy these five makers of spherical conserves—[he is speaking of the Scarabæi]—and their numerous rivals. I consign to them these inventors of the spherical box, of greater volume and smaller surface, for provisions liable to dry up, and I ask them how such logical inspirations, such rational provisions, could unfold themselves in the murky intellect of the insect. . . . The work of the pill-makers propounds a grave problem to him who is capable of reflection. It confronts us with this alternative: either we must attribute to the flat cranium of the Dung-beetle the notable honour of having solved for itself the geometrical problem of its conserve, or we must refer it to a harmony ruling all things beneath the eye of an Intelligence that, knowing all, has foreseen all. . . . If the Rhynchites and its emulators in defensive means against the perils of asphyxia have taught themselves their trade; if they are really the children of their works, do not let us hesitate . . . let us recognise them as engineers capable of winning our diplomas and degrees; let us proclaim the microcephalic Weevil a powerful thinker, a wonderful inventor. You dare not go to these lengths; you prefer to have recourse to the chances

of hazard. Ah, but what a wretched resource is hazard, when such rational contrivances are in question! One might as well throw into the air the characters of the alphabet and expect to see them, on falling, form certain lines selected from a poem! Instead of loading our minds with such tortuous ideas, how much simpler and more truthful to say: "A sovereign Order rules over matter." This is what the Sloe Weevil tells us in its humility![1]

We heard the same language, uttered perhaps even more persuasively, from the Hairy Ammophila, among many others, one day when, as a beginner in entomology, he considered her performing her delicate and expert operations, bending over a bank on the table-land of Les Angles, in company with a friend:

The Wasp acts with a precision of which science would be jealous; she knows what man hardly ever knows; she understands the complex nervous system of her victim. . . . I say, she knows and understands; I ought to say, she acts as though she knew and understood. Her act is all inspiration. The insect, without having any conception of what it is doing, obeys the instinct that impels it. But

[1] *Souvenirs,* v., p. 130. *The Sacred Beetle and Others,* chap. xvi., "The Lunary Copris." *Souvenirs,* vi., p. 97. *The Glow-Worm and Other Beetles,* chap. x., "Insect Colouring." *Souvenirs,* vii., p. 193.

whence comes this sublime inspiration? . . . For me and my friend, this was and has remained one of the most eloquent revelations of the ineffable logic that rules the world and guides the unconscious by the laws of its inspiration. Moved to the depths by this flash of truth, we felt, forming upon our eyelids, tears of indefinable emotion." [1]

The more he sees, the more he reflects, the more radiantly clear does the meaning of these facts appear to him:

Can the insect have acquired its skill gradually, from generation to generation, by a long series of casual experiments, of blind gropings? Can such order be born of chaos; such foresight of hazard; such wisdom of stupidity? Is the world subject to the fatalities of evolution, from the first albuminous atom which coagulated into a cell, or is it ruled by an Intelligence? The more I see and the more I observe, the more does this Intelligence shine behind the mystery of things. I know that I shall not fail to be treated as an abominable "final causer." Little do I care! A sure sign of being right in the future is to be out of fashion in the present.

A long time ago [says a contemporary apologist], I was discussing matters with an astronomer who

[1] *Souvenirs,* I., p. 220. *The Hunting Wasps,* chap. xiii., "The Ammophila." *Souvenirs,* V., p. 322. *The Life of the Grasshopper,* chap viii., "The Mantis: The Nest."

was possessed of knowledge, a certain penetration and a certain courage. He pushed this penetration and this courage to the length of declaring, before the Academy of Sciences, that the laws of nature form a harmony and reveal a plan.

I had an opportunity of congratulating him, and he was good enough to express his satisfaction. I profited by this to suggest that he was doubtless ready to develop his conclusions yet further, and that since he recognised the existence of a plan he admitted, at the origin of things, a Mind: in short, an intelligent Being.

Suddenly my astronomer turned up his nose, without offering me any argument capable of any sort of analysis.

In vain did I explain that to deduce the existence of an intelligent Being because one has discovered the existence of a plan is, after all, to continue the train of reasoning which deduces the existence of a plan after observing that there is a system of laws. In vain I pointed out that I was merely making use of his own argument. My astronomer refused to go any further along the path upon which he had entered. There he would have met God, and that was what he was unwilling to do.[1]

J. H. Fabre does not stop half-way to the truth for fear of meeting God. He is logical, loyal, and courageous to the end. He argues from the facts to laws and from laws to

[1] E. Tavernier.

causes, and from them to the "Cause of causes," the "Reason of reasons," [1] concerning which, says M. Perrier, he has not "the pedantic feebleness of grudging it the name of God." [2]

If Fabre so briskly attacks the theory of evolution, it is not so much because of the biological results which it attributes to the animal *far niente* as because it offers such a convenient pretext for that sort of intellectual laziness that willingly relies upon an explanation provided beforehand and readily exonerates itself from the difficult task of searching more deeply into the domain of facts as well as that of causes.[3] If the explanation were not notoriously insufficient one might overlook the abuses which it covers, innocently enough, but, to speak only of the insect, all its analyses, were they admissible, leave the problem of instinct untouched: "How did the insect acquire so discerning an art? An eternal problem if we do not rise above the dust to dust" [4] of evolution. At all events, as it is presented it is merely, we

[1] *Souvenirs,* X., pp. 92, 214.
[2] *Revue hebdomadaire,* October 22, 1910.
[3] *La Nature,* March 26, 1910. "It will be to M. Fabre's lasting honour that he has never known any idleness of this kind or, indeed, any kind of idleness."
[4] *Souvenirs,* VI., p. 75.

repeat, "a convenient pillow for the man who has not the courage to investigate more deeply."[1] For him, he has this courage and this power of ascension, and he readily spreads his wings to rise above matter and the night of this world and soar to those radiant heights where Divinity reveals itself, together with the supreme explanation of the light which lightens this darkness and the life that inspires this matter.[2]

[1] Fabre denies "by the light of the facts" almost all the ideas which evolution invokes to explain the formation of species. (*Revue des Deux Mondes*, p. 891.) He says: "The facts as I see them lead me away from Darwin's theories. Whenever I try to apply selection to the facts observed, it leaves me whirling in the void. It is majestic, but sterile: evolution asserts as regards the past; it asserts as regards the future; but it tells us as little as possible about the present. Of the three terms of duration one only escapes it, and that is the very one which is free from the fantastic imaginings of hypothesis."

[2] Fabre appears to conceive a relation between instinct and the organ analogous to that which obtains between the soul and the body; for him the first element of instinct is an incorporeal element which he does not otherwise define, which he characterises merely as a native impulse, irresistible, infallible and superior to the organism as well as to the sensibility of the insect, although it is not separated from nor completely independent of these.

For the rest, instinct remains a mystery. What it is at bottom, "I do not know, I shall never know. It is an inviolable secret." Like all true scientists, Fabre recognised the narrow limits of human knowledge and did not fear to admit them. According to him, neither life nor instinct results from matter; we must seek for an

We have said enough to show that Fabre is decidedly of the race of those great men who soar high above the vulgar prejudices, pedantries, and weaknesses, and whose wonderful discoveries bring them nearer to God as they uplift them above the common level of humanity.

Having written *The Harmony of the World,* and casting a final glance at the charts of the heavens and also at the long labour of his life, Kepler offered his God this homage:

O Thou, who by the light of Nature hast caused us to sigh after the light of grace, in order to reveal unto us the light of Thy glory, I thank Thee, my Creator and my God, that Thou hast permitted me to admire and to love Thy works. I have now finished the work of my life with the strength of the understanding which Thou hast vouchsafed me; I

explanation not below but *above* it, and of all the marvels created that compel us to look upward and proclaim the Supreme Intelligence whence they are derived, this is one of the most striking and persuasive: "*The more I see, the more I observe, the more this Intelligence shines forth behind the mystery of things.*"

Fabre thus joins hands with Pasteur, and may fitly be mentioned in the same breath with him, as one of the most distinguished defenders of spiritual science and belief against materialistic science and atheism. This is all the more remarkable in that Fabre has never attempted to make any *apologia,* but simply stated whither all his observations and reflections tended.

have recounted to men the glory of Thy works, in so far as my mind has been able to comprehend their infinite majesty. . . . Praise the Creator, O my soul! It is by Him and in Him that all exists, the material world as well as the spiritual world, all that we know and all that we do not know as yet, for there remains much for us to do that we leave unfinished. . . .

Uniting the point of view of exegesis with that of natural science, one of the greatest and broadest minds of antiquity, Origen, has written these noble words:

The providential action of God manifests itself in the minute corpuscles of the animals as well as in the superior beings; it directs with the same foresight the step of an ant and the courses of the sun and the moon. It is the same in the supernatural domain. The Holy Spirit which has inspired our sacred Scriptures has penetrated them with its inspiration to the last letter: *Divina sapientia omnem Scripturam divitus datam vel adunam usque litterulam attigit. . . .*[1]

The reader will doubtless pardon a professor of exegesis, whose admiration for the prince of entomologists has made him his biographer, for terminating this analysis of

[1] Quoted from Mgr. Mignot, *Lettres sur les Etudes ecclésiastiques*, p. 248.

the naturalist's philosophical and religious ideas by a synthetic view which brings him into closer communion with his hero: "all things are linked together," as he himself has said,[1] and the study of the Holy Scriptures, if he could have devoted himself thereto, would certainly have led this noble and penetrating mind to render the same testimony to the truth of Christ and the Church as that which it has rendered to the truth of the soul and God.

[1] *Souvenirs*, III., p. 91.

CHAPTER XXI

A GREAT PREPARATION

THE title which we have given this chapter is that which M. Perrier, the eminent Director of the Museum of Natural History, lately inscribed at the head of a remarkable article in the *Revue hebdomadaire*. In this the author showed how just and how far inferior to his deserts are the honours so tardily accorded to the man whose life and labours we have sketched.

We assuredly cannot say that Fabre's name and his work have until lately remained unknown or even undervalued. At an early period he was honoured by the admiration and friendship of such men as Dufour and Duruy. On several occasions his works have been crowned by the highest awards of the Institute. Not content with belonging to the Zoological Society and the Entomological Society of France, and with being elected in 1887 corresponding member of the Academy of Sciences, he has also been granted, as though in emulation, the title of honorary member by the most famous foreign academies, the Scientific Societies of Brussels,

Geneva, etc., and the Entomological Societies of London, Stockholm, and St. Petersburg.

If it is true, as some one has said, that posterity begins at the frontier, these numerous and flattering distinctions, coming from all points of the horizon, are full of promise for the immortality of his work. It is undoubtedly the case that foreigners benefit by a degree of remoteness which is favourable to sane judgment. For that matter, as far as Fabre is concerned, the favourable verdict of his peers is surrounded by hardly fewer guarantees of impartiality in France than abroad, for this worthy son of the Rouergue has never been of those who seek to obtain honours by any of the means that achieve success through intrigue or influence, and we may without paradox say that it is farther from his village to Paris than from Paris to London; from obscurity in his village to fame in Paris than from fame in Paris to fame in London and other capitals.

Nevertheless, legitimately acquired and well founded though it might be, Fabre's great scientific reputation had hardly extended beyond the limits of the academies and the somewhat restricted circle of professional biologists and naturalists, or that of a few

amateurs who were better informed than their fellows, or more perspicacious in the choice of their reading.

Was it not just to exhibit, beyond this circle of initiates, achievements that belonged to all and had all the qualities requisite for popularity? Was it not right to draw this great man out of the obscurity in which he had so long shut himself up, and at last to place this distinguished figure on the magnificent pedestal built up by half a century's work of the highest value, and the greater part of a century of a poor and laborious life? So thought the friends and admirers of the hermit of Sérignan, who organised, last year, the celebration of his jubilee, and, in the Press, cited him in the order of the day.

These celebrations took place in the familiar rustic setting so dear to the aged scientist. It was a morning of April, in the little village of Vaucluse which we need not name, at the edge of the enclosure where for more than forty years he has kept *rendezvous* with his insects, on the threshold of the house that shelters his studious retirement. The venerable naturalist was there, surrounded by the members of his beloved family, his constant collaborators, with whose names he

loved to sprinkle the pages of his books. To greet him came the worthy folk of Sérignan, justly proud of him, his friends from far and near, and the delegates of the learned societies of France and foreign countries, with whom the representatives of the State, the Sub-prefect of Orange and the Prefect of Avignon, had the good taste to associate themselves.

At the moment when an unexpected ray of sunlight filtered through the clouds like a caress and a benediction from Heaven upon the head of the old scientist, ever faithful to the call of the Power on high, France and Sweden, to mention only the most eager, joined in crowning him with laurels; France offering him a magnificent gold plaque in the name of the Academy of Sciences, and Sweden the Linnæan Medal in the name of the Royal Academy of Stockholm. France—or rather, the Académie Française—has since then offered a further evidence of her admiration by granting him the largest of its money prizes and unanimously recommending him to the jury entrusted with the award of the Nobel Prize.

There are seldom fêtes without banquets or banquets without speeches. Among the speeches delivered at Sérignan at the banquet

of April 3rd, we must at least mention M. Perrier's, from which we give an extract on the first page of this book. It may be found *in extenso* in the *Revue scientifique* for the 7th of May, 1910. The series of toasts was followed by the reading of numerous telegrams of congratulation, the most loudly applauded of these being that of M. Edmond Rostand, which ran as follows:

Prevented from being in your midst, I am nevertheless in spirit with those who are to-day honouring a man worthy of all admiration, one of the purest glories of France, the great scientist whose work I admire, the profound and racy poet, the Virgil of the insects, who has brought us to our knees in the grass, the hermit whose life is the most wonderful example of wisdom, the noble figure that, under its black felt hat, makes Sérignan the complement of Maillane.

It must be recorded that Maillane had cordially united with Sérignan, and that poetry and science were at one in celebrating the fame of the man who has justly been called the poet of entomology.

Such, in its most salient features, was the festival which consecrated, a little late in the day, one of our purest national glories.

This homage had not the ephemeral character of most jubilees, even scientific ones. It

found more than one echo, and had an aftermath throughout the country. We will not insist further upon the eager, enthusiastic interest extended by the public to the new edition of the *Souvenirs,* and the publication of *La Vie des Insectes* and *Les Mœurs des Insectes,* which are volumes of selected extracts from the *Souvenirs,* nor even on the decoration of the Legion of Honour which so justly raised to the rank of officer him who had been a simple *chevalier* for forty years.

But we must refer at somewhat greater length to the three proofs of admiration which must have found their way most surely to his heart.

The first, to which we have already alluded, came from the highest literary authority of France, and, we might say, of the world. In his report on the literary prizes awarded by the Académie Française, M. Thureau-Dangui devoted the following passage to our friend:

I have reserved to the last the largest of our direct prizes, the Neé prize, awarded to the author of the *Souvenirs entomologiques,* M. Jean-Henri Fabre. He cannot, at all events, be accused of indiscreet solicitation. In his hermitage at Sérignan, where he has pursued a long life of toil, a life so modest that despite the most wonderful discov-

eries it was for a long time a life of obscurity, M. Fabre gave not a thought to the Académie Française, which is all the better pleased to show that it was thinking of him.

M. Fabre has, indeed, too clear a vision and too sane a mind not to perceive the problems of a philosophical order which arise from the wonderful data of his discoveries. At every step, in the mysterious domain of instinct, reason cannot fail to divine, beyond the little kingdom explored by observation, the unfathomable secrets of creation.

To all, even to those who believe themselves least interested in matters of natural history, I cannot refrain from saying: "Read these narratives; you will appreciate their charm, their geniality, their simplicity, their life; you will fall in love with this delightful science, which is pursued day after day in the beautiful summer weather, "to the song of the Cicadæ;" this science which is truly Latin, Virgilian at times, which goes hand in hand with poetry, which is so imbued with love that it sometimes seems as though there arose, from these humble entomological souvenirs, a strophe of the canticle of created things.[1]

A mark of homage, which, indeed, adds nothing to the fame of the celebrated laureate of the Institute and so many other learned Academies, but which deserves mention here because it certainly touched a fibre of the old scientist's heart which all the rest might have

[1] Session of the 8th December 1910.

failed to stir, is that which was accorded him by the little Society which gathers about the belfry of Rodez the intellectual *élite* of his own country-side.

The records of the *Société des lettres, sciences et arts de l'Aveyron* contain, in the minutes of the session of the 27th October 1910, a communication from the president of the Society which closes with the words:

> In order to associate ourselves in some fashion with the unanimous bestowal of honours and eulogy of which this venerable old man is at present the recipient, we propose to accord him the title of honorary member. It is the highest distinction at our disposal, and we think he will accept it with sympathy.

Needless to say that the whole assembly accepted their president's proposal with enthusiasm and by acclamation. Some time later the famous naturalist wrote to the Society, through his present biographer, a touching letter of thanks, in which he said, among other things, that, coming from his own country, this distinction had been very precious to him. The delicate feeling expressed in these words gives us to hope that the contribution to the work of reparation which we have sought to make will not be without some value in his eyes.

CHAPTER XXII

THE LAST HEIGHTS[1] (1910-1915)

I

IN the year 1910 Fame flung the gate of the *harmas* wide open. Coming late, she seemed anxious to repair her long neglect.

The process of reparation continued. It grew fuller, more marked, and burst into a splendid apotheosis during the following years.

Scientists as a class had accused Fabre of mixing up Horace and Virgil with his entomological adventures. He was despised for quoting these authors; he was placed upon the Index for introducing grace and passion into studies which officially were dry and cold as statistics. But in joining the Académie Française on the occasion of the jubilee of 1910, the Académie des Sciences gloriously avenged this unjust and Pharisaical disdain.

But there were yet some of "time's re-

[1] This chapter was written by the Abbé Fabre especially for the English edition.—B. M.

venges" to be taken for the injustice which Fabre had suffered.

We have spoken of his early struggles in the University, of his career, first hampered, then shattered, of the jealousies and persecutions evoked by this "irregular" self-taught pioneer; no doubt the work of a triumphant clique, which eventually drove him from the house and slammed the door. This was, as the reader may remember, on the occasion of his lecture to young girls at Saint-Martial.

But now, on the 23rd of April 1911, a fresh invasion of young girls, almost all pupils of the University, burst into the *harmas*.[1] And what had they to say? That they came from Paris to visit the glories of Provence, and that next to Mistral they had wished to see Fabre, after the "emperor of poetry," the "king of science," and they made it clear that it was not only to the scientist, but still more to the pioneer, the initiator—or why not say, with them, to the most illustrious of "cronies"[2]—that the girl "cronies," as they called one another in their group, had come to present their heart-felt

[1] This was the pilgrimage of the young girls of the *Université des Annales politiques et littéraires.*

[2] The French words are *"Cousins," "Cousines." Cousin* =cousin, good friend, crony.—B. M.

homage. Who to-day would dare to contest their right to become his pupils, to seek with him "the freshest honey and the most poetical observations of the insects that people the boughs and the flowers," to enter with him into the secret of all these little lives, "which are, like ourselves," they said, "creatures of the good God"?

And serious personages[1] from the precincts of the Académie and the Université de France lent voice and gesture to the ingenuous utterance of radiant youth, which delightfully made amends for the past.

There was another official authority, the highest of all, to which Fabre had not much reason to be grateful. Long and brilliant services in the cause of public instruction, scientific works of the highest order, need of leisure and resources for his investigations, family responsibilities, and the struggle for life—what claims did not these represent to distinction and to the generosity of the public authorities! But what part or lot had he in these in reality? One might almost say none. One day, as though by chance, the perspicacity of a Minister of the Empire had all but rescued him from poverty and oblivion. A mere accident without sequence:

[1] Jules Clarétie, Jean Richepin, Adolphe Brisson, etc.

for it was immediately followed by the total collapse of the Empire and the institution of the Republic. Fabre was not even among the number of the pensioned!

It needed the trumpet-blast of the jubilee (1910) to remind the authorities to complete the *beau geste* of Victor Duruy, and after forty years to replace the rosette of the Legion of the Cross. And it took the loud outcry of indignation uttered by Mistral and the strong feeling aroused by the report, which was echoed by the whole Press, of their involuntary debt to the ex-professor, to obtain for the nonagenarian a pension of two thousand francs (£80) a year, which was nearly fifty years in arrears!

The reparation was far from adequate; but it could not be made by means of money.

"Come at once, or I will have my gendarmes bring you." In summoning him thus to the Court in order to see and decorate this fine but timid genius, the Emperor, in 1869, had performed a generous action. The President of the Republic did still better, when, in 1913, in the course of his tour through Provence, he sought to honour by his visit him who had so greatly honoured his mother-country and his native and adopted provinces.

Fabre, who was then in his ninetieth year, and could no longer stand upright, awaited M. Poincaré sitting in a chair before the threshold of his house, surrounded by his family; on his right hand stood the Sister who was watching over his welfare.

A week before the President's visit, I went to Sérignan to see my distinguished relative and to bless the marriage of his son Paul Henri.

In the familiar intimacy of this family celebration he told me, as a piece of good news: "It is possible that I shall soon receive a visit from Monseigneur the Archbishop of Avignon." He said this with a marked satisfaction which was very unlike his usual detachment.

I understood at once that his mind was harking back to the evil days of 1870 and contrasting them with the present. What did not happen in that disastrous year? Victor Duruy had just instituted courses of lectures for adults in order to make up for the deficiencies of popular education. Young girls were especially invited to these lectures. On the pretext of opening the golden doors of science to them it was hoped—no mystery has been made of the matter since—to emanicipate them from the tutelage of the

clergy,"[1] to remove them from, or to dispute, the influence of the Church. The scientist, enamoured of the beauty of natural history, saw in this venture merely an opportunity for diffusing the knowledge and appreciation of his science among the people. Accordingly he opened a course of evening lectures in the old Abbey of Saint-Martial. And in the crowd that flocked eagerly to hear him beneath the vaulted roof of the old disaffected church were squads of young girls, more numerous at every lecture, enchanted by the magic of his teaching, by its lucidity and vitality. Who could object to such a success? Yet there were those who objected. A perfect cross-fire of criticism and complaint arose from the Church and the University. Fabre replied fearlessly, not without a touch of offended pride. The quarrel became embittered. Some went so far as to denounce him publicly and to point out, from the vantage of the pulpit, the dangers of his teaching. Shortly afterwards the municipality dismissed him from his office as conservator of the *Musée Requien,* without regard to his family responsibilities, which were then considerable.

When he visited Fabre in 1914 Monseig-

[1] E. Lavisse, quoted by Dr. Legros, *op. cit.,* p. 81.

neur Latty was fully aware of these proceedings, and of the exodus which followed them, and also of the painful impression which it had produced upon Fabre, and the bitter-sweet reflections to which it still at times gave rise. Did the eminent prelate approach the illustrious old scientist bearing an olive branch as well as the golden laurel? I do not know; but the fact is that this first interview was quickly followed by a second, which was still more friendly, and from that moment Fabre never again spoke of and did not seem even to remember the privations of the past.

One reflection naturally occurs to us here, and it is rather an attempt to be just than a plea *pro domo*. Because once in his life the great naturalist was confronted by the hostility of certain persons belonging to the world of religion, need we erase from his carefully secularised history all that connects him with the Church, from the motherly caresses of the "holy woman" who assuaged his first griefs to the tender care of the worthy Sister who consoled his last sufferings? Must we forget that he was admitted as pupil-teacher to the *lycée* at Rodez, as pupil to the seminary of Toulouse and the Normal College of Avignon on the recommendation of M. l'Abbé d'Aiguillon-Pujol,

his old Rodez headmaster? Are we to say nothing of his articles in the *Revue scientifique* of Brussels, one of the principal organs of Catholic science, or of his very important contributions to the classic series published under the editorship of M. l'Abbé Combes? If we are, rightly, deeply interested in the smallest details of his life and all that concerns him, are we to say nothing of his friendly relations with his curé [1] or of the religious practices of his family and household, or of his generous participation in all the works of charity in his parish, not excepting the free school?

"Neither of Armagnac nor a Burgundian"; neither secular nor clerical. The truth is that if we consider the matter candidly, without bandaging our eyes and without exclusive prejudice, Fabre should serve as a bond of union rather than a bone of contention.

The ex-Director of the Beaux-Arts, Henry Roujon, who was a fervant apostle of national concord, used to say: "Statutes are only lastingly beautiful if the sons of the same mother can inaugurate them without railing at one another."

Fabre, according to this maxim, might well

[1] M. l'Abbé Germain, ex-curé of Sérignan.

have statues erected to him. And speaking of statues, we must not, having mentioned the orators, forget the artists. All the illustrated periodicals had already popularised the original, eloquent physiognomy of our hero. This was too ephemeral a homage for his admirers. His features must be chiselled in marble and exposed under the blue sky to the delighted and affectionate eyes of his compatriots. Provence was the first to propose the idea. Le Rouergue followed. Avignon, Orange, and Sérignan each wanted their monument. Saint-Léons profited by its right of seniority to take precedence of Rodez and Maillane.

" Nous voulions te fêter vivant
Doux patriarche et grand savant,
Et fier amant de la nature,
Et le Rouergue où tu nacquis
Et la Provence où tu conquis
Le laurier d'or qui toujours dure.[1]

(We wished to honour you living,
Gentle patriarch and great scientist,
And proud lover of Nature,
Both Le Rouergue where you were born,
And Provence where you won
The golden laurel that lasts for ever.)

[1] François Fabié.

The first subscription-list was opened by the Normal College of Avignon, and a special appeal was made to the schoolmasters of Vaucluse and the rest of France. Other appeals were addressed to all without distinction, and the subscriptions flowed in from all sides, from scientists and men of letters, priests and schoolmasters, *bourgeois* and workers in town and country, to whom it was explained that the statue was in honour of one of themselves who had achieved greatness by his labours.

He himself, in his modesty, wished all to regard him only as a diligent student.

"Master," ventured an intimate of the *harmas* one day, "they are talking of putting up a statue of you close by here."

"Well, well! I shall see myself, but shall I recognise myself? I've had so little time for looking at myself!"

"What inscription would you prefer?"

"One word: *Laboremus.*"

What lesson was ever more necessary than this eloquent reminder of the great law of labour! But this grand old man, who by labour has achieved fame, teaches us yet another lesson of even rarer quality.

Let us hear him confiding his impressions to a friend: "The Mayor of Sérignan, it

seems, proposes to erect a bust of me. At this very moment I have, staying in the house, the sculptor Charpentier, who is making my statue for a monument they are going to set up in the Normal College of Avignon. In my opinion there's a good deal of the beautiful saints about it!" [1]

This reminds us of a remark whispered into a neighbour's ear on the occasion of the jubilee celebrations, in the midst of all the fashionable folk by whom he was surrounded: "I must be very queer to look at!"

Here is a more sober if not more weighty remark. One day some one was reminding him, in my presence, of all the marks of honour lavished upon him during his last two days. I heard him reply quickly with the famous apostrophe: *Ματαιότης ματαιοτήτων, καὶ πάντα ματαιότης.*[2]

He had another manner, perhaps still more expressive, of rendering the same idea: he would puff into the air a cloud of smoke from his pipe, which never left him, and, before

[1] In Provence, as in Italy, the plaster statues sold by itinerant Italians are known as *santi belli* = beautiful saints.—B. M.

[2] The text is from Ecclesiastes, i. 2: "Vanity of vanities, all is vanity," but Fabre cites it according to the *Discours contre Eutrope,* in which he had learnt it at school, alluding to the appropriate reflection of Saint John Chrysostom: *Ἀεὶ ρεν, ράλιστα Σεπνε ἠχαιρον εἰπεῖν: ματαιότης,* etc. (Semper quidem, nunc vero maxime opportunum est dicere: Vanitas, etc.

the blue vanishing spiral: "That," he would say, "is human glory!"

Here we recognise the man whom Rostand represented as follows in the verses inscribed upon a bas-relief which makes his collection of sonnets, entitled *Fabre-des-Insectes,* as it were the pendant of Charpentier's monument:

"C'est un homme incliné, modeste et magistral,
Pensif—car dans ses doigts il a tenu des ailes
Poursuivant les honneurs moins que les sauterelles."

(A man who stoops, modest and magisterial,
Thoughtful—for in his fingers he has held wings,
Pursuing honours less than the grasshoppers.)

II

The fine and unusual qualities of Fabre's career consist in this; he has attained fame while seeking nothing but truth: and what a truth!—the truth concealed in the humblest of created things!

Before Fabre's time entomology was a poor little science, with no savour of life or freshness about it, without a ray of sunshine, without a soul; like those poor little insects under glass or stuck on pins, which it was its mission to study.

In his hands and in his books, as though by

magic, entomology became truly a living science, provided with wings—the wings of imagination and poetry, of thought and philosophy.

It is a far cry from the dense materialism of the "dust-to-dust" scientists who content themselves with dissecting poor little murdered bodies to the winged spiritualism of this open-air entomologist, interrogating with his bright, loving glance these little insect souls, at once so wonderful and so unconscious. And they all tell him the same thing: *Ipse fecit nos et non ipsi nos.*[1] (It is He that hath made us, and not we ourselves.)

Some one has said, and it is a saying worth repeating, so just and admirable is it, and so characteristic of the man and his work: With Fabre we have every moment, so to speak, the feeling, the surprise, of rising toward the infinitely great while stooping over the infinitely little.

Of this scientist, this philosopher, whose mind soars so readily from the "little things" to the great, to the "very great," from the little curiosities of observation to the great problems that are to be encountered in the higher domains of thought, his friends conceived the idea of demanding a synthesis

[1] Psalm 100, verse 3.

of the reflections scattered through the pages of the *Souvenirs*.

This was his reply:

> Because I have shifted a few grains of sand upon the shore, am I in a position to understand the abysmal depths of the ocean? Life has unfathomable secrets. Human knowledge will be erased from the world's archives before we know the last word concerning a gnat.

Thus the Homer, the Plato of the insects. He is utterly unassuming. He will not allow his admirers to impose upon him. He does not allow himself to be snared by the lure of vivid, brilliant language, nor by the intoxicating problems of inner truths whose surface he grazes. According to him the sum of all his work has been but to "shift a few grains of sand upon the shore" of knowledge, and it is useless for him to endeavour to sound the mysteries of life; he has not even learned—he does not even think it possible to human knowledge to learn—"the last word concerning a gnat."

Does this imply that he has relapsed into scepticism; that finally, in despair, he renounces the ambition of his whole life, *vitam impendere vero?* By no means. He has striven to attain it even beyond his strength.

When he considers himself incapable of adding further volumes to his work he busies himself with preparing a definitive edition, and in a touching farewell to his beloved studies he declares that they are so full of charm and unexplored marvels that could he live several lives he would devote them all to them without ever succeeding in " exhausting their interest."

There we have Fabre. After labouring all his life without troubling about fame, ploughing his straight furrow like his peasant forebears, like them, when the night has come, he simply binds his sheaves with a humble and profound realisation of the narrow limits of his work as compared with the immensity of the world and the infinite mystery of things.

It is a fine spectacle, that of the entomologist on the summits of science, as of fame, raising himself, by his humility, above both, and fully prepared, to return to Him toward whom aspire those souls that have attained the limit of human climbing:

O Jesu corona celsior
Et veritas sublimior.

III

Neither science nor fame could prevent him from suffering. To begin with, there is

suffering attaching to these, for all labour has its burden, all light its shadow.

This none knew better than he whose genius was a protracted patience and his life a hard-fought battle. And as though it was his destiny to suffer to the end, he did suffer still when the tardy hour of his fame had struck. Was it not an ordeal still to be assailed by visits and speeches when "nothing was left but rest and silence"? How can a man delight in the incense of his admirers when he is broken with fatigue?

To express this contrast, to show that all was not unmixed joy in these flattering visits to the patriarch of Sérignan, I will borrow the delicate brush of an artist friend of Fabre's:

Night falls upon Sérignan, serene, limpid, violet and amethyst. The sounds of day fade one by one. Still a few distant hoots from the horns of motor-cars flying along the dusty roads, or the sound of a dog baying the new moon, which shows its slender sickle on the horizon; sometimes, too, as though to eclipse the first stars, a rocket roars, a prelude to the fireworks which are about to conclude the apotheosis. . . . J. H. Fabre, the hero of the fête, the lover of the Sphex, the Mantis, the Dung-beetle, is very tired. Think of it—ninety years of age, and almost ninety years of labour! . . . and

a world-wide reputation to sustain . . . and visits to receive. To-day it was the visit of a Minister and all the flies on the ministerial wheel. And he had to return thanks, feeling upon him the eyes of the reporters and the photographer's lens. What an ordeal! Fabre can hold out no longer! . . .

Do you not feel that the harvest of fame at ninety years of age and after almost ninety years of labour is perhaps even more painful than the harvest of science in the ardour of youth?

Meditating upon his history, with its full days and hours, Fabié, in a delightful flight of imagination, shows us the harassed entomologist escaping from the past to find himself alone with his thoughts and his beloved insects. "He slips silently to the gate of his *harmas*. There he lies down on a bank thickly carpeted with lavender and withered couch-grass" . . . A few moments pass. His children intervene: "he is relaxing himself, stretching himself, soothed, happy as a little child.—'But, father, you aren't thinking! When the dew is falling!' 'Ah, my children, why did you wake me? I was having such a beautiful dream!' For in his sleep he had entered into conversation with the crickets of his native country-side."

Fatigue of the body, weariness of the mind,

and a breaking heart! Suffering pressed closely upon him at the close of his days.

"It is better to be loved than to be celebrated," said Aubanel, the delicate poet of Avignon. As long as Fabre had beside him his beloved brother, his adored wife, and his darling children, he was at least conscious of a kindly atmosphere of memories, and of tenderness that made up for what he lacked and helped him to endure his afflictions with serene resignation.

But now, little by little, there came a void about him. Death has its surprises and life its demands.

With the death of his wife, in July 1912, half his own soul died. With that of his brother, in 1913, his life was almost wholly shattered, crushed, buried in the tomb.

With the marriage of the last of his sons and his two youngest daughters almost all the life of the house, all the caressing grace of light, considerate footfalls, of clear tender voices, of smiles and kisses, had forsaken the old man, to return only in passing and at distant intervals. His isolation became more and more complete.

Was all over? No, this was hardly the beginning of his afflictions. In the great silence of the *harmas* there burst of a sudden

the terrible thunderclap of war which roused to a protest of intolerable grief the uttermost fibres of his being.

The whole man suffered. The Frenchman, to see his beloved country the victim of the brutal and underhand aggression of a predatory nation: the father to see his dear children, a son and two sons-in-law, cast into the furnace; the idealist and the great-hearted man who had held war to be a relic of barbarism, doomed to disappear from the annals of the human race, to see war declared, and spreading with the violence of a conflagration, surpassing in horror all that history tells us of the armed conflicts of the past.

Before the bloody vision of the battlefields, how should he not feel shaken to the depths of his being by the tremors of a terrible anger and a vast pity, he who had never been able to see an insect suffering without a pang at the heart?

True, in his incomparable *Iliad,* the Homer of the Insects had often described creatures that hunt one another, kill one another, devour one another with indescribable ardour and ferocity, and he knew that he had only written a chapter of that " struggle for life " which is to be found on every step

of the biological ladder, with the same disregard of weakness and suffering.

But he would fain have seen man assert his superiority over the animals by repressing these instincts, which come from below, by the free flight of the aspirations vouchsafed from above, by the progressive subordination of the brute power of force to the spiritual power of justice and love.

While these distressing problems were filling his mind, and while, in protest against happenings so utterly contrary to his ideas, he would thump his fist upon his famous little table, a woman was moving gently to and fro, playing the parts, alternately, with the same calm countenance, of Martha and of Mary; and when he asked her her secret, she showed him her crucifix and read the Gospel to him, as though to wring from his heart the cry that was uttered by the poet of *La Bonne Souffrance*:[1]

"Vingt siècles de bonté sont sortis de ces mystères,
Je crois en toi, Jésus . . ."

In moments of affliction, Fabre is even closer to the Truth than on the heights of knowledge and fame. For we are never

[1] Françoise Coppée.

nearer the God of the Gospel than when we most feel the want of Him.

IV

More than ninety years of life and almost as many of labour, nearly five years of overwhelming fame, and almost as many of unspeakable suffering: must not a man be "built of heart of oak," as they say in Aveyron, to survive so many trials?

Like the oaks of his native parts, the patriarch of Sérignan continued to brave the assaults of time, and even when he began to feel that his life was declining, it seemed as though it was only withdrawing itself from its long and manifold ramifications in the external world to take refuge, as in an inexpugnable asylum, in the depths and roots of his being. He was one of those of whom people say with us that they "cannot die."

Fabre's work is immortal—that is agreed. But the artisan?

Let us resume our comparison. Like the oak that loses its boughs, one after the other, he saw falling one by one the several factors of his life. His life was the *harmas*, that paradise of insects, that laboratory after his own heart, where he could make his observations under the blue sky, to the song of the

Cicadæ, amid the thyme, lavender, and rosemary. Now he was seen there no longer; hardly were the traces of his footsteps yet visible through the untrimmed boughs that crossed the paths and the grass that was invading them.

His life: it was his study, his museum of natural history, his laboratory, where, with closed doors, face to face with Nature, he repeated, in order to perfect them, to consign them to writing, his open-air researches, his observations of the to-day or yesterday. Now he no longer sets foot in it, and now one saw—with what respect and tenderness—only the marks left by his footsteps upon the tiled floor, as he came and went about the big observation-table, which occupies all the middle of the room, in pursuit of the solution of the problems propounded by his insects.

And we have a feeling that we are looking upon, and handling, relics, when on this table we still see the pocket-lenses, the microscopes and modest apparatus which has served for his experiments. And we have the same feeling before the collections in the glass-topped cases of polished pine which stand against the whitewashed walls, and before the hundred and twenty volumes of

the magnificent herbarium which stand in a row beneath them, and before the innumerable portfolios of mycological plates, in which vivid colour is blended so well with delicacy of drawing, and before the registers and stacks of notes in fine, clear handwriting, without erasures, which promised a fresh series of *Souvenirs*.

Must they be left thus abandoned previous to their being dispersed or falling into other hands—all these precious fragments of an incomparable life, and these venerable premises, consecrated by such rare memories?

The great naturalist's disciples could not resign themselves to the thought, and by a touching inspiration of filial piety they have found the means to secure these treasures, as by a love stronger than death, against this harrowing dispersal.

To keep the dead in their last dwelling, or attract them thither, the ancient Egyptians used to place there the image of their earthly dwelling, offering them at least a reduced facsimile of their life's environment, of the objects and premises which had in some sort made part of their life and their soul.

Fabre's friends sought to do still better. In order to preserve it in its integrity, they

determined to acquire the *Harmas,* with its plantations, its collections, and all its dependencies, and in order to make their homage as complete as possible they made, with this object, an appeal for international subscriptions, which were unhappily interrupted by the war.

"This is the museum which we wish to dedicate to him," said the chief promoter of this pious undertaking,[1] "so that in after years, when the good sage who knew the language of the innumerable little creatures of the country-side shall rest beneath the cypresses of his *harmas,* at the foot of the laurestinus bushes, amidst the thyme and the sage that the bees will still rifle, all those whom he has taught, all those whom he has charmed, may feel that something of his soul still wanders in his garden and animates his house."

However, the soul of the "good sage" which they thus sought to capture and hold here on earth—in short, to imprison in his work and its environment—made its escape and took flight toward loftier regions and wider horizons.

To see him in the twilight of the dining-

[1] Dr. Legros, *Les Annales politiques et littéraires,* April 12, 1914.

room where he silently finished his life, majestically leaning back in his arm-chair, with his best shirt and old-fashioned necktie, his eyes still bright in his emaciated face, his lips fine and still mobile, but thin with age and at moments trembling with emotion, or moved by a sudden inspiration—to see him thus, would you not say that he was still observing? Yes, but his observations are now of an invisible world, a world even richer in mysteries and revelations than the world below, so patiently explored for more than fifty years.

One day, when two professors of the Grand-Séminaire de Saint-Paul-Trois-Châteaux [1] had come to see him, as the time drew near to bid them good-bye, the old man held out his hands and tucked them under their arms, and, not without difficulty, rose from his arm-chair, and arm-in-arm with them advanced, tile by tile, to the threshold of the house, whither he had determined to accompany them. Suddenly, pressing their arms more closely and alluding to their cassocks and their vocation, he said, energetically: "You have chosen the better part"; and, holding them back for a last word, he

[1] The Abbé Joseph Betton and his friend, the Abbé Juiot.

added: "Life is a horrible phantasmagoria. But it leads us to a better future."

This future the naturalist liked to conceive in accordance with the images familiar to his mind, as being a more complete understanding of the great book of which he had deciphered only a few words, as a more perfect communion with the offices of nature, in the incense of the perfumes "that are softly exhaled by the carven flowers from their golden censers," amid the delightful symphonies in which are mingled the voices of crickets and Cicadæ, chaffinches and siskins, skylarks and goldfinches, "those tiny choristers," all singing and fluttering, "trilling their motets to the glory of Him who gave them voice and wings on the fifth day of Genesis." [1]

This last passage might be underlined, for now more than ever, in our thoughts of this scientist, of whom it has been said that "with a taste for Nature he has given us an appreciation of God," the work cannot be divorced from the artisan without the grossest inconsistency.

One who had the good fortune to become intimate with Fabre during the last days of his life tells how eagerly the naturalist

[1] J. H. Fabre, cited by Dr. Legros.

used to accept the wild flowers which he brought in from his walks, how tenderly he would caress them with his frail fingers and brilliant eyes. Both looks and gestures expressed an infinite admiration for the pure and simple work of Nature as God has ordained it:

"And when one evening," says his friend, "I remarked that these little miracles clearly proved the existence of a divine Artificer: 'For me, I do not believe in God,' declared the scientist, repeating for the last time his famous and paradoxical profession of faith: 'I do not *believe* in God, because I *see* Him in all things and everywhere.'"

Another day he expressed his firm and profound conviction to the same friend, in a slightly different form. "God is Light!" he said dreamily.—"And you always see Him shining?" "No," he said suddenly, "God does not shine; He obtrudes Himself."

The man who thus bows before God has truly attained, on the heights of human knowledge, what we may call with him the threshold of eternal life. To him God sends His angels to open the gates, that he may enter by the straight paths of the Gospel and the Church.

After the death of Mme. Fabre in 1912, a nursing Sister of the Congregation of Saint-Roch de Viviers was installed at the *Harmas;* her name was Sister Adrienne.

The old man appreciated her services so greatly that he was overcome with dejection by the very thought that she might be recalled by her superiors, according to the rule of her Order, after the lapse of a certain period of time. And he would gratefully press her hand when the good Sister sought to relieve his anxiety and inspire him with the hope that she would be allowed to remain in his service till the end of his days.

He found her simplicity, her delicacy, her good nature, and her devotion so delightful that he could not refrain from telling her so plainly in the direct, forcible manner familiar to him: " You are invaluable, Sister; you are admirable. I love religion as you practise it."

" He has often told me," she writes, " that when he could not sleep at night, he used to pray, to think of God, and address to Him a prayer which he would himself compose."

In the spring of 1914 the aged naturalist, who was more than ninety years of age, felt that his strength was failing more per-

ceptibly, so that the doctors diagnosed a fatal outcome in the near future.

On receiving the news of this alarming condition, Monseigneur the Archbishop of Avignon hastened to the *Harmas*. The invalid expressed his delight and gratitude for the visit. Their relations were so cordial that the prelate decided to continue them by a series of admirable letters which have fortunately been published.

In these letters, with great delicacy, Monseigneur Latty avoided all that might run contrary to the naturalist's opinions, and very gently endeavoured to induce him to die as a Christian.

To draw him more surely to the light that shines from the Cross and the grace which raises the soul above itself, he asks him to recite every evening, in unison with him, the beautiful prayer of the dying Saviour, which he calls "the prayer of the heights," the height of Golgotha, the height of life: *In manus tuus Domine commendo spiritum meum.* (Into Thy hands, O Lord, I commend my spirit.)

However, Fabre was not yet at the end of his Calvary. Contrary to the expectation of the doctors, a return of strength enabled him to live to see another Spring, and it needed

nothing less than the terrible shocks of the tempest unloosed upon Europe to overcome the powers of resistance that had braved so many storms.

During the summer of 1915 his weakness grew more marked, so that there was no hope of many more days of life. The curé of Sérignan having been mobilised, the absence of the priest at this time was a cause of great anxiety to Sister Adrienne—always on the watch for the soul ready to escape her.

Providence happily came to her assistance; and a Breton priest, who had come to the South to recover his health, and had for some time been acquainted with the master, was admitted to terms of intimacy. After some hesitation he decided to speak to the scientist of the Sacrament of Penitence. With that beautiful simplicity of his, and to the astonishment of the priest, Fabre, who seemed expecting the invitation, replied:

"Whenever you will."

"Purified by absolution, fortified by the Extreme Unction, received, in full consciousness, into the Church, Fabre displayed a wonderful serenity. Pressing the hand of the priest who was officiating, he listened to the recommendation of the soul. And when he

heard the sacred words that were familiar to him—*In manus tuus, Domine*—his lips moved as though to pronounce the Amen of supreme acceptance, while his gaze, which was beginning to grow dim, settled upon the Sister's crucifix."

It was the 11th October 1915, at six o'clock of the evening, that the great scientist so gently surrendered his soul to God.

The obsequies, celebrated on the 16th October, "were simple and affecting, as he would have liked them to be. For a few moments before leaving the church, the old naturalist's fine face was again exposed. It reflected an immense serenity. On his peaceful features one divined the satisfaction of the man who is departing with his work accomplished. In his parchment-like hands he clasped a wooden crucifix with ivory tips. Beside his head was a wreath of laurestinus. Beside one arm was his great black felt hat."

The service was celebrated by the Archpriest of Orange, in the little church; and then the harsh, rocky soil received the body of him who had so often stooped over it.

This "life of J. H. Fabre told by himself" would not be complete if we did not give here the text of the epitaph which he himself had composed beforehand. It is

magnificent: it gives one the impression of an unfurling of wings:

"Quos periisse putamus
Præmissi sunt.
Minime finis, sed limen
Vitæ excelsioris."

Fabre was preceded to the tomb by several months by Mistral, who was seven years his junior. "Very different in an equal fame, these two men are inseparable. Mistral and Fabre both represented Provence; one was born there and never left it, and to some extent created it; the other adopted and was adopted by it, and, like his illustrious compatriot, covered it with glory." [1]

But while Fabre represented Provence, which saw the unfolding of his rich and vital nature, and while it lavished upon him all the beauty of its sky, all the brilliance of its Latin soul, all the savour of its musical and picturesque language, and all the entomological wealth of its sunny hills, he none the less represents the Rouergue, whence he derived his innate qualities and his earliest habits, his love of nature and the insects, his

[1] E. Laguet, *Annales politiques et littéraires,* April 5. 1914.

thirst for God and the Beyond, his indefatigable love of work, his tenacious enthusiasm for study, his irresistible craving for solitude, the strange, powerful, striking and picturesque grace of his language, his almost rustic simplicity, his blunt frankness, his proud timidity, his no less proud independence, and with all these the ingenuous and unusual sensitiveness and sincere modesty of his character.

THE END

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